Natura Impact Statement

Monksland Pipeline

(Gas to Greener Ideas Athlone)

Prepared by: Moore Group – Environmental Services

3 September 2024

On behalf of Gas Networks Ireland

Project Proponent	Gas Networks Ireland
Project	Monksland Pipeline (Gas to Greener Ideas Athlone)
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Abbreviations

AA	Appropriate Assessment
ABP	An Bord Pleanála
CEMP	Construction Environmental Management Plan
EEC	European Economic Community
EPA	Environmental Protection Agency
EU	European Union
FWPM	Freshwater Pearl Mussel
GIS	Geographical Information System
LAP	Local Area Plan
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OSI	Ordnance Survey Ireland
pNHA	proposed Natural Heritage Area
SAC	Special Area of Conservation
SPA	Special Protection Area
SuDS	Sustainable Drainage System
UÉ	Uisce Éireann
WFD	Water Framework Directive

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1. Introduction

1.1. General Introduction

This Natura Impact Statement (NIS) has been prepared by Moore Group – Environmental Services on behalf of Gas Networks Ireland. This NIS report contains information to assist the competent authority in carrying out an Appropriate Assessment (AA) for the purposes of Article 6(3) of the Habitats Directive and section 177V of the Planning and Development Act 2000, as amended, (the "Planning Acts") in respect of the construction and operation of the Monksland Pipeline (GNI asset number 'GNI138') designed to connect the existing BGE/77 750mm Ories to Perssepark 'Pipe to the West' Pipeline to the permitted Monksland Above Ground Installation (AGI) at Monksland, Athlone, Co. Roscommon (hereafter referred to as the Proposed Development).

This NIS informs the Appropriate Assessment process in the determination of any adverse effects on the integrity of European sites, having regard to their conservations objectives and in light of best scientific knowledge. It is necessary that the Proposed Development has complied with Article 6(3) of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (referred to as the Habitats Directive). For the purposes of the Proposed Development, this is transposed into Irish Law by Part XAB of the Planning and Development Act 2000 as amended[1]. The focus of the assessment is on objectively assessing by reference to the evidence as to whether the Proposed Development will adversely affect the integrity of the European sites in light of their conservation objectives.

1.2. Legislative Background - The Habitats and Birds Directives

Articles 6(3) and 6(4) of the Habitats Directive are transposed into Irish Law inter alia by the Part XAB of the Planning Acts (section 177U and 177V) governing the requirement to carry out appropriate assessment screening and appropriate assessment, where required, per Section 1.1 above.

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) on the conservation of natural habitats and of wild fauna and flora is the main legislative instrument for the protection and conservation of biodiversity in the European Union (EU). Under Article 3 of the Habitats Directive,

[1]The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477) as amended (referred to as the Habitats Regulations) transposes the Habitats Directive for the purposes of proposed projects subject to legislation other than the Planning and Development Act 2000, as amended.

Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a EU context.

The Birds Directive (Council Directive 2009/147/EC) on the conservation of wild birds, transposed into Irish law by the Habitats Regulations 2011, as amended, and the Wildlife Act 1976, as amended, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Birds Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

SACs designated under the Habitats Directive and SPAs, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. These sites are also referred to in Irish legislation as 'European sites'.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to have a significant effect on Natura 2000 sites. Article 6(3) establishes the requirement to screen all plans and projects and to carry out an appropriate assessment if required (Appropriate Assessment (AA)).

> ***Article 6(3):*** *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

Article 6(4) establishes requirements in cases of imperative reasons of overriding public interest.

These obligations in relation to Appropriate Assessment have been implemented in Ireland under Part XAB of the Planning and Development Act 2000, as amended, and in particular Section 177T thereof.

Section 177T(1)(b) and (2) state as follows with regard to a Natura Impact Statement:

> *"(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites."*

> *"(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites."*

The EU Water Framework Directive[2] (WFD) is an important piece of environmental legislation which aims to improve our water quality. It applies to rivers, lakes, groundwater, estuaries and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the second cycle runs from 2016 – 2021 and the third cycle runs form 2022-2027. It focuses on protection of surface water and groundwater and the consideration of the WFD has been addressed in the Environmental Impact Assessment Screening Report submitted with the planning application[3]. The key conclusions set out and incorporated into this NIS where the assessment of potential impacts on the Cross River AND RECEIVING River Shannon was assessed and necessarily considered the impact on surface waters which are linked to the European sites considered in this AA.

1.3. Methodology

The Commission's methodological guidance (EC, 2002, 2018, 2021 see Section 1.4 below) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1 and 2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. In order to screen out a project, it must be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

[2] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

[3] Environmental Impact Assessment Screening Report prepared by AWN Consulting, August 2024.

Stage 2 Appropriate Assessment: In this stage, there is a consideration of the impact of the project with a view to ascertain whether there will be any adverse effect on the integrity of the Natura 2000 site either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are predicted impacts, an assessment of the potential mitigation of those impacts is considered.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

1.4. Guidance

The NIS has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.)(soon to be superseded by EC Guidance in prep.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC, 2018).
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021).
- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021).
- Office of the Planning Regulator (OPR) Practice Note PN01 Appropriate Assessment Screening for Development Management (OPR, 2021).

1.5. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;

  - Open Street Maps;
  - Digital Elevation Model over Europe (EU-DEM);
  - Google Earth and Bing aerial photography 1995-2024;
  - EPA Mapping https://gis.epa.ie/EPAMaps/Water
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
  - Natura 2000 - Standard Data Form;
  - Conservation Objectives;
  - Site Synopses;
- National Biodiversity Data Centre records;
  - Online database of rare, threatened and protected species;
  - Publicly accessible biodiversity datasets.
- EPA Water Quality records;
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans in neighbouring areas;
  - Roscommon County Development Plan 2022-2028

1.6. Statement of Authority

This report was compiled by Ger O'Donohoe (B.Sc. Applied Aquatic Sciences (GMIT, 1993) & M.Sc. Environmental Sciences (TCD, 1999)) who has 30 years' experience in environmental impact assessment and has completed numerous reports for Appropriate Assessment Screening and Natura Impact Statements in terrestrial and aquatic habitats.

Supporting surveys of Otters were undertaken by O'Donnell Environmental. Tom O'Donnell is a Chartered Environmentalist and a full member of the Chartered Institute of Ecology and Environmental Management. He was awarded a BSc in Environmental and Earth System Science [Applied Ecology] in 2007 and an MSc in Ecological Assessment in 2009, both from UCC. Tom has 15 years professional experience in the environmental industry, including working on projects such as windfarms, overhead power lines, roads, cycleways and residential developments. Tom is licensed by NPWS for roost disturbance (Ref: DER/BAT 2023-16) and to capture bats (C25/2023).

Engineering and technical data was supplied by Gas Networks Ireland Fingleton White and AWN Consulting.

1.7. Description of the Proposed Development

1.7.1. Construction Design

The proposed development comprises c. 2.488 km 200 NB pipeline will provide a natural gas supply to the permitted Greener Ideas Facility by connecting the permitted Monksland AGI to the existing BGE/77 750mm Ories to Perssepark 'Pipeline to the West'. The detailed specifications, including the specific locations and distances along the pipeline (chainage), description of the location, and the construction method is provided below in the Table below.

Route section	Description of Location	Pipeline length (m)	Construction method
Chainage 000 Tie-in point to the existing BGE/77 pipeline	The proposed pipeline will tie into the existing 750 NB 'Pipeline to the West', BGE/77, in an agricultural field to the west of the R446 road.	N/A	Tie in Location
Chainage 000 to 015 Agricultural land	The pipeline will be routed east through agricultural land to the R446 road culvert crossing point.	c. 15 m	Open cut trench in field
Chainage 015 to 020 Crossing the culvert of the tributary of the Newtownflood Stream on the R446	The pipeline will be routed north and cross a culverted tributary of the Newtownflood Stream within the R446 road.	c. 5 m	Open cut trench culvert service crossing
Chainage 020 to 1610 Public roadways R446	The pipeline will be routed north along the R446	c. 1,590 m	Open cut trench in roadway
Chainage 1610 to 1900 Public roadways L2027	The pipeline will be routed west along the L2027 to the Drum Community Centre.	c. 290 m	Open cut trench in roadway
Chainage 1900 to 2065 Agricultural land	The pipeline will be routed northwest from the L2027 through agricultural land.	c. 165 m	Open cut trench in field
Chainage 2065 to 2075 Crossing of the tributary of the Cross River	The pipeline will be routed north and cross through a ditch tributary of the Cross River.	c. 10 m	Open cut trench - flume watercourse crossing

Chainage 2075 to 2155 Agricultural land	The pipeline will be routed northwest through agricultural land to the Cross River launch shaft.	c. 80 m	Open cut trench in field
Chainage 2155 to 2215 Crossing underneath the Cross River	The pipeline will be routed underneath the Cross River, utilising a trenchless crossing method. Launch shaft and receiver shaft will be required at this location. A temporary bridge will be installed over the Cross River to facilitate access.	c. 60 m	Trenchless Crossing Temporary bridge
Chainage 2215 to 2245 Agricultural land	The pipeline will be routed north through agricultural land until the M6 motorway and Galway to Dublin Hueston rail line launch shaft.	c. 30 m	Open cut trench in field
Chainage 2245 to 2365 Crossing underneath the M6 motorway and Galway to Dublin Hueston rail line crossing	The pipeline will be routed beneath the M6 motorway and Galway to Dublin Hueston rail line, utilising a trenchless crossing method. Launch shaft and receiver shaft will be required at this location.	c. 120 m	Auger bore
Chainage 2365 to 2420 Scrub land at the margin of the M6 motorway	The pipeline will be routed west through scrub land at the margin of the M6 motorway; crossing minor drainage ditches.	c. 55 m	Open cut trench
Chainage 2420 to 2430 Crossing of the tributary of the Cross River	The pipeline will be routed north and cross through a ditch tributary of the Cross River.	c. 10 m	Open cut trench - flume watercourse crossing
Chainage 2430 to 2435 Piped tributary of the Cross River	The pipeline will be routed west and cross a underground closed piped tributary of the Cross River within the Greener Ideas Facility site.	c. 5 m	Open cut trench – culvert service crossing

Chainage 2335 to 2488 Greener Ideas Facility and tie-in to the permitted Monskland AGI	The pipeline will be routed west through the Greener Ideas Facility to the permitted Monskland AGI Compound, where it will tie-in to the Monskland AGI.	c. 53 m	Open cut trench in field / Greener Ideas Facility

The Construction Methodology included with the S39A application was prepared by Fingleton White providing the framework from which a detailed Construction Methodology will be developed by the appointed construction contractor. This will include comprehensive method statements and construction techniques to be finalised before site work commences.

AWN Consulting have prepared the project outline Construction Environmental Management Plan (oCEMP) included in Appendix 2, this provides the framework from which the CEMP will be developed by the appointed construction contractor to avoid, minimise or mitigate any construction effects on the environment prior to commencement on site. This plan should be viewed as a live document that will be updated as and when required. The contractor will then prepare specific method statements setting out site working requirements which manage perceived risks to the environment e.g., traffic management, work safety plans etc.

Construction compounds will be established along the proposed pipeline route. The compounds will serve as the central hubs for various activities and functions during the construction of a project. They are temporary setups that provides essential welfare facilities and space for workers, equipment, materials, and administrative needs. The oCEMP (AWN, 2024) details the elements that the site compounds will include, as well as the factors that will be considered when finalising the locations of these compounds.

The contractor will implement health and safety measures in relation to the safety of the workforce and the public. Additionally, measures will be applied to minimise traffic delays, disruption and maintain access to residences and businesses along the public road. Construction traffic access to the site will be via the existing roadways where the majority of the pipeline will be installed, the R446 and the L2027.

Construction methodologies to be implemented and materials to be used will ensure that the pipeline is installed in accordance with the guidelines and standards of GNI. See further detail presented in 1379-01-RT-0102-R1 Gas to GIL Athlone Construction Methodology prepared by Fingleton White and submitted with this application including sequencing of works and diagrams. This section summaries the key environmental aspects of the proposed construction elements.

Tie In Location

The new pipeline shall tie into the existing 750 NB BGE/77 pipeline in an agricultural field on the west side of the R446 road located at (Chainage 000).

An approximate 4.5m deep excavation shall be undertaken here to facilitate the hot tap tie-in. An excavated length of approximate 14 m around the hot tap is required to facilitate the drilling equipment.

Hot tapping allows a connection to an existing pipeline to be completed while the line is fully operational, ensuring no shutdown is required and that no gas is lost from the pipe.

Open Cut Trench Methodology in Fields

The Monksland Pipeline shall be laid in agricultural lands (c. 413 m in total) using an open cut method as described in this section. These sections are located at Chainage 000 to 015, Chainage 1900 to 2065, Chainage 2075 to 2155, Chainage 2215 to 2245 and Chainage 2365 to 2488.

In brief the methodology is to excavate trenches to a depth of 1600 mm, ensuring a minimum cover of 1.2 m above the pipe. Subsoil will be stored separately from topsoil to prevent mixing. Trench supports and close sheet piling may be used where necessary to aid construction. Dewatering of the pipe trench may be required along the pipeline route and will be carefully controlled to prevent sediment entering watercourses in accordance with the oCEMP (Appendix 2).

Open Cut Trench Methodology in Roadway

The Monksland Pipeline shall be laid in existing roads (c. 1,885 m in total) using an open cut method. These sections are located at Chainage 015 to 1900.

In brief the methodology is to excavate to a minimum depth of 1600 mm (to base of trench) and 500 mm width (both at base and ground level). Extend excavations locally every 12 – 24 m at bell hole locations to facilitate welding. Trench depths will be adjusted based on existing service crossings to meet the minimum cover requirements as per I.S. 328: 2021. Existing services/utilities will be crossed as per the typical service crossing. The subsoil shall be stored separately to asphalt/bitmac for future reinstatement, any excavated material not used will for reinstatement will be removed as waste. Trench supports and close sheet piling may be used where necessary to aid construction. Dewatering of the pipe trench may be required along the pipeline route and will be carefully controlled to prevent sediment entering watercourses in accordance with the oCEMP (Appendix 2).

Open Cut – Service Crossing

The Monksland Pipeline has one crossing of an existing culvert (tributary of the Newtownflood stream) located at Chainage 0150 to 020, and one crossing of an existing piped watercourse (tributary of the

Cross River) located at Chainage 2430 to 2435. These crossings will follow a typical third-party service crossing, whereby the pipeline will be installed to avoid interaction with the existing underground service. Given the minimum depth of cover required (1200 mm to the top of the pipe) the pipeline will be constructed to pass underneath the culvert section. A minimum separation distance of 500mm will be maintained between the pipeline and the watercourse/culvert pipe.

The service crossing methodology at this section includes:

- A trench will be excavated beneath the concrete pipe, ensuring that the existing pipe remains intact and undisturbed (minimum separation distance of 500mm).
- The gas pipeline will be laid in the trench below the watercourse/culvert pipe.
- The trench will be backfilled and compacted to restore the ground to its original level.

The pipeline is designed to pass underneath the piped section with an adequate separation distance, eliminating any potential impact on the stream's structural integrity and flow. There are no instream works at this location.

Open Cut Methodology - Flume Water Course Crossing

The Monksland Pipeline has 2 no. open cut watercourse crossing through the tributary of the Cross river located at Chainage 2065 to 2075, and one located at Chainage 2420 to 2430.. This water crossing is proposed to be undertaken using an open cut method, with the water temporarily diverted using a flume (pipe). The flume will temporarily direct water away from the trench area, preventing interference from construction activities and ensuring the safety of workers and the integrity of the watercourse.

At this crossing location the flume (temporary culvert) crossing is installed to allow for an uninterrupted running track for the duration of the construction works, and removed once reinstatement of the working area is completed.

Flume pipes sized to ensure they are capable of accommodation flood flow water volumes are inserted into the watercourse, ensuring they extend past the area of the proposed trench and running track. The waters being crossed shall be effectively dammed both upstream and downstream of the trench location so as to ensure that works are undertaken in the dry. Straw bales are placed downstream to capture sediments as required. The water course is then left uninterrupted until a few days (estimated 2-3 days) before the pipeline install time.

The pipe trench is then excavated below the flume pipe. This excavated material is stored separately to the topsoil and subsoil and only this material will be used to backfill the watercourse trench. Trench

supports and close sheet piling may be used where necessary to aid construction. Dewatering of the pipe trench may be required along the pipeline route and will be carefully controlled to prevent sediment entering watercourses in accordance with oCEMP (Appendix 2).

Trenchless Methodology – Cross River, Railway and Motorway Crossing

The Monksland Pipeline has 2 no. planned trenchless crossings one for the Cross River (Chainage 2155 to 2215), and one for the Railway and Motorway (Chainage 2245 to 2365).

In brief the methodology includes installation of launch and reception shafts at either end of the crossing, and trenchless excavation to install the pipeline.

The trenchless crossing will require the launch and reception shafts (temporary works) these will be carefully planned, designed, set out and fully excavated. These shafts, constructed using steel sheet piled cofferdams, ensure safe excavation by holding back soil and water pressures. The design of the cofferdams considers factors like excavation depth and equipment loads. Controlled dewatering is necessary to prevent sediment from entering watercourses, as outlined in the oCEMP (Appendix 2). After the gas pipe is installed, the pits are backfilled in a structured sequence, with steel sheet piles removed afterward.

The Launch Shaft will be located on the southern side of the Cross River and approximately 12m long x 4m wide x 5m deep sheet piled. The Reception Shaft will be located on the northern site of the river and approximately 5m long x 4m wide x 5m deep sheet piled. Installation of launch and reception shafts at either end of the road/rail crossing. The Road/Rail Crossing will have the Launch Shaft will be located to the south of the railway approximately 15m long x 3.5m wide sheet piled. The Reception Shaft will be located to the north of the motorway and approximately 3.5m long x 3.5m wide sheet piled.

The Preliminary Design for the Cross River Crossing has determined that the trenchless crossing can be achieved with a Conventional Micro-tunnelling approach or Guided Auger-boring / Hybrid MT. These methods include the use of concrete pipe sleeve that provides continual ground support to the excavated tunnel. The trenchless crossing will achieve a minimum clearance of 1.6m from the riverbed to the top of the pipe is required by IS 328:2021 and GNI standards. The trenchless crossing of the Cross River is a minimum distance of 60m.

Dewatering During Construction

Dewatering and removal of surface run-off is necessary to create a dry working environment and prevent water from seeping into the excavation and flooding the construction site.

Dewatering from the established shallow ground bores will be managed as required to assist with creating a dry working environment and prevent water from seeping into the excavation (launch and receiver) and flooding the construction site.

Dewatering water from within these overburden deposits will be contained within the site, treated, and ultimately discharged to the Cross River.

Construction Duration

The overall start-to-finish duration is estimated to be 9 months. Construction is anticipated to commence in Q1 2025 and be completed by Q1 2026.

Temporary Works Areas

The Proposed Development will require the establishment of temporary works areas including three (3) construction compounds in order to facilitate the Proposed Development works. Locating the areas along the route ensures that construction activities can be efficiently managed and supervised, reducing the logistical challenges associated with a single centralised compound.

The proposed works areas are as follows:

- 1 no. temporary works area and compound at the proposed hot tap location,
- 1 no. temporary works area and compound located in the agricultural lands to the north of the Drum Community Centre, and
- 1 no. temporary works area and compound at the proposed tie-in with the Monksland AGI.

The temporary works area locations have been identified and indicative space planning undertaken for the Hot Tap compound and Pipeline works area, respectively.

There are 4 no. potential locations identified for the temporary working area and compound at the Monksland AGI. The final AGI compound location will be established in collaboration with the appointed construction contractor(s).

Haul roads will be established within the running track and temporary works area, Depending on the soil conditions. These will be stabilised utilising materials such as crushed rock, gravel and a layer of geotextiles to improve load-bearing capacity and prevent deformation under heavy traffic.

1.7.2. Description of the Existing Environment

The Proposed Development is a linear development located in agricultural land to the west of Athlone, Co. Roscommon with the 'Hot Tap' connection at Keeloges off the old Athlone to Galway Road R446 and then running along the road carriage way north to Crannagh where it turns west along the L2027 toward Drum Community Centre. From here it traverses wet grassland fields to a point where it passes underneath the Cross River and the Railway and M6 Motorway to reach the permitted Monksland Above Ground Installation (AGI) at Monksland on the north side of the M6.

The proposed Monksland Pipeline, via the permitted Monksland AGI, will provide a natural gas supply to the permitted Greener Ideas Facility. The Greener Ideas Facility consists of the 100MW gas fired power plant with associated plant, equipment and buildings (permitted under Roscommon County Council (RCC) Reg. Ref: 18/256, as revised by RCC Reg. Ref. 22/177 and RCC Reg. Ref. 22/234), and 110kV single-bay air insulated substation (Cuilleen), 110kV underground grid connection and all associated works (permitted under An Bord Pleanála (ABP) Reg. Ref.: ABP-317588-23.

Figure 1 shows the Proposed Development location and Figure 2 shows a detailed view of the Proposed Development boundary on recent aerial photography. Figures 3a and 3b show the layout of the Proposed Development at the AGI site and major route crossings to the north and along the R446 to the Hot Tap tie-in to the south.

(FW2) Cross River

This habitat classification applies to The Cross River under which the pipeline will be placed by guided auger bore. This methodology will require a temporary bridge crossing to facilitate boring machinery and machinery to dig reception and launch pits to continue under the railway and motorway to the north.

The Cross River is described in the SHRFB Rivers Report (2008[4]); as; *a low lying limestone stream that rises in Co Roscommon approximately four kilometres southwest of Lough Funshinagh. It flows in a south westerly direction until it joins the River Shannon two kilometres south of Athlone. Although the Cross River is a good stream for trout fishing and has undergone rehabilitation work, it was previously damaged by drainage work in 2001 (O'Reilly 2002). An electric fishing survey was conducted on the 25th of July 2008 along a 176m stretch of channel. One boat-based electric-fishing unit was used to conduct three fishings. The site was located immediately upstream of an unnamed bridge in Co. Roscommon, 250m upstream from the Cross's confluence with the River Shannon, approximately two kilometres south of Athlone. The mean channel width was 6.2m, and the mean depth was 1.3m. The total wetted area sampled was 1,091m2. This site was composed entirely of glide habitat, with evidence of previous*

[4] Sampling Fish for the Water Framework Directive. The Central and Regional Fisheries Boards.

drainage work obvious. The substrate was composed exclusively of mud and silt. The main land use adjacent to the site was pasture. The river bank was not fenced, but steep vertical banks prevented cattle from accessing the channel. A few mature willow trees were present in the riparian zone; however, these were too far away from the channel to provide any shade to the river.

A total of five fish species were recorded in the Cross River, with perch being the most abundant species, followed by roach. The two brown trout recorded during this survey measured 19.6cm and 30.8cm in length. Based on a classification of growth in rivers by Kennedy and Fitzmaurice (1971), trout growth rate in the Cross was therefore categorised as fast.

The Cross River is the main river in the 26G Upper Shannon catchment which flows into the SHANNON (UPPER)_120. The SHANNON (UPPER)_120 is also the receiving water for the SHANNON (UPPER)_110, the CLOONBONNY STREAM_010 and the BOOR_020 water bodies. The results for the Cross River water quality trend assessment are presented in the 26G Upper Shannon Catchment Summary WFD Cycle 2 Assessment[5];

Average orthophosphate concentrations along the Cross River are relatively low with values of 0.014, 0.015 and 0.018mg/l at CROSS (ROSCOMMON)_020, CROSS (ROSCOMMON)_030 and CROSS (ROSCOMMON)_040 respectively. The Environmental Quality Standard (EQS) of 0.035mg/l is not exceeded at any of the main channel monitoring points where water chemistry data is available.

Total oxidised nitrogen (TON) concentrations are low and remain below the 2.6mg/l threshold at each monitoring point. A moderate spike in ammonia is apparent at CROSS (ROSCOMMON)_030, however the EQS (0.065mg/l) is not exceeded. Similarly, ammonia concentrations at CROSS (ROSCOMMON)_020 and CROSS (ROSCOMMON)_040 are below the EQS. There is no water chemistry data available for CROSS (ROSCOMMON)_010.

During site surveys the river was observed as having a high turbidity, c. 100-250 NTU during the Winter period. The banks contain occasional Fools Watercress (*Apium nodiflorum*) and Water Starwort (*Callitriche stagnalis*) with higher ground having Meadowsweet (*Filipendula ulmaris*), Nettle (*Urtica diocia*) and occasional Water mint (*Mentha aquatica*) along with Reed Canary Grass (*Phalaris arundinacea*) and occasional Fine-leaved Water Dropwort (*Oenanthe aquatica*) observed within the channel

The most recent EPA water quality rating for the Cross River at Cross Bridge (EPA code RS26C100300 'Bridge S. of Doyle's Bridge' in 2023 was a Q4 or Good status. This point being at the R446 downstream of the proposed pipeline crossing. The EPA report notes that; *the Cross River is strongly influenced by*

[5] Upper Shannon (Mid Shannon) Catchment Assessment 2010-2015 (HA 26G) Catchment. Catchment Science & Management Unit Environmental Protection Agency December 2018 Version no. 3

groundwater especially in its upper reaches downstream of Lough Funshinagh resulting in a typically low dissolved oxygen saturation for a river. Improvements to good quality were noted in the middle reaches (0200 and 0300) but a decline to poor was recorded at the last site (0400) immediately upstream of the River Shannon not far downstream from Athlone town.

(FW4) Drainage ditches

This habitat classification applies to water courses and the upper reaches of these courses which are in essence large stagnant or slow-moving drainage ditches leading to the Cross River. These have similar marginal species as above with Fools Watercress (*Apium nodiflorum*) and Water Starwort (*Callitriche stagnalis*) in stagnant section along with Duckweed (*Lemna minor*) and with higher ground having Meadowsweet (*Filipendula ulmaris*), Nettle (*Urtica diocia*), occasional Water mint (*Mentha aquatica*), Bulrush (*Typha latifolia*) and Yellow-flag Iris (*Iris pseudacorus*).

The water course located at the Hot Tap Tie-in is considered a drainage ditch which is culverted under the old Galway Road R446 and continues as a large steep sided drainage ditch to the Newtownflood Stream and Cross River.

On the northern side of the Motorway the pipeline will cross an underground closed piped tributary of the Cross River within the Greener Ideas Facility site (Chainage 2430 to 2435), and cross through a ditch tributary of the Cross River (Chainage 2420 to 2430) using a flume method.

(GA1) Improved agricultural grassland

The proposed pipeline runs northwards, from the hot tap connection at the corner of a field of Improved grassland (GA1) (Chainage 000 to 015), part of which has had topsoil stripped and is now classed as Spoil and bare ground (ED2), along the R446 regional road. The route then follows a local road west as far as the Drum Community Centre, where it turns north to enter agricultural land. All roads and footpaths are classed as Buildings and artificial surfaces (BL3).

The majority of the fields adjacent to the proposed development are improved with the exception of the first two fields surveyed at the northern extent either side of the Cross River which comprise wet grassland and wetter sections of the development area in the vicinity of the AGI at Monksland.

The improved grassland fields are essentially large, in most cases, open fields of grassland which are managed for either silage, hay or grazing dominated by common forage grasses such as Perennial Rye-Grass and Yorkshire Fog with little in the way of herbs present along with Creeping Thistle, Meadow Buttercup, Nettle and Silverweed (*Potentilla anserina*). As the ground gets higher, species of drier habitats also increase, with Perennial Rye-Grass, Crested Dogs-Tail (*Cynosurus cristatus*) and False-Oat Grass (*Arrhenatherum elatius*) all recorded. The edges of the fields contain some well grown Hawthorn (*Crataegus monogyna*) and Ash (*Fraxinus excelsior*).

A field of damp Improved agricultural grassland (GA1) lies to the north of the river, with an area of Gorse (*Ulex europaeus*) dominated scrub in its northeastern corner. The fields, including the roadside boundary are lined by hedgerows (WL1), which have largely been allowed to develop into taller treelines (WL2). Hawthorn, Grey Willow, Elder (*Sambucus nigra*) and Blackthorn (*Prunus spinosa*) are the dominant species, together with taller Ash, much of it diseased.

(GS4) Wet grassland

The pipeline crosses two fields of Wet grassland (GS4)(Chainage 1900 to 2155) opposite Drum Community Centre, with characteristic species such as abundant Soft Rush (*Juncus effusus*), Meadowsweet (*Filipendula ulmaria*), Yorkshire Fog (*Holcus lanatus*), Star Sedge (*Carex echinata*) and Creeping Buttercup (*Ranunculus repens*). The two fields are divided by a Drainage ditch (FW4) (tributary of the Cross River(Chainage 2065 to 2075)) lined by treelines (WL2) on both banks. In less shaded portions of this ditch, Floating Sweet Grass (*Glyceria fluitans*) and Bulrush (*Typha latifolia*) were observed, elsewhere the tall Ash (Fraxinus excelsior), Alder (*Alnus glutinosa*) and Grey Willow (*Salix cinerea*), clothed in Ivy (*Hedera hibernica*) entirely shades the ditch. Stands of Mixed broadleaf woodland (WD1) and Scrub (WS1) have developed in parts of these fields, with Ash, Beech (*Fagus sylvatica*), Willow and Hawthorn (*Crataegus monogyna*), fringed by dense Bramble (*Rubus fruticosus*).

(WD1 & WS1) Woodland & Scrub

The majority of lands within the planning boundary to the north of the M6 motorway are occupied by the site of the Greener Ideas Power Station, which is currently under construction, as well as associated carparking and access roads. These are classed as (BL3). A triangular section of land southeast of this site comprises an area of shelterbelt trees between the Monksland industrial area and the M6, classed as Mixed broadleaf woodland (WD1). Trees are generally of similar age (10-20 years), and a mix of native species such as Grey Willow, Hawthorn and Common Alder, and non-native species, including Oriental Plane (*Platanus orientalis*) and Grey Alder (*Alnus incana*). The understorey comprises abundant Nettle (*Urtica dioica*), Yorkshire Fog (*Holcus lanatus*), Rough Meadow Grass (*Poa trivialis*) and Creeping Thistle (*Cirsium arvense*). A grassy track runs through part of this section, and along its western perimeter, with Nettle and False Oat Grass (*Arrhenatherum elatior*), while a dense hedge of Dogwood (*Cornus* sp.) forms the western boundary. Lands closer to the M6 to the south, as well as those adjacent to the Cross River, and southwest of the Greener Ideas site, comprise tall Wet grassland (GS4), with Meadowsweet, Great Willowherb (*Epilobium hirsutum*), Iris, False Oat-Grass and Reed Canary Grass. The areas fringing the Railway line are scrubby in patches with frequent Gorse.

(BL3) Buildings and artificial surfaces

These areas refer to road crossings and hardstanding areas of tracks and existing pathways along the R446 regional road and L2027 local road (Chainage 015 to 1900). All roads and footpaths are classed as Buildings and artificial surfaces (BL3).

Invasive Species

A large infestation of Japanese knotweed (*Reynoutria japonica*) was recorded growing on the property of the cottage located on the R446 (ITM 600804 739020; Chainage 450) adjacent to the proposed pipe laying works. It was apparent that the JKO has been previously treated with herbicide resulting in reduced growth, excepting for a single mature stand which appears to have been missed in the original herbicide treatment. Despite this treatment, many small plants were recorded in the vicinity of the road boundary wall outside the planning application boundary.

Otters

A report on Mammals including Otters was prepared by O'Donnell Environmental is presented as Appendix 1. The main findings of the report are summarised as follows.

The desk study aspect of the Otter Survey revealed two relevant internationally designated sites with Otter listed as a qualifying interest: Lough Ree SAC (0440) located 2.64km northeast and River Shannon Callows SAC (0216) located 1.55km east of the proposed development. Both sites are connected hydrologically via the Cross River and it is considered likely that individuals associated with these designated sites utilise the area surrounding the proposed development at least occasionally.

No evidence of Otter holts was identified along the watercourses surveyed as part of the proposed development. The primary watercourse, the Cross River, is largely characterised by steep banks comprised of rank grassland and dense vegetation extending right up to the riverside. Additionally, the Cross River appears to periodically inundate the surrounding area during periods of inclement weather. Considering the riverbank structure and periodic high-water levels resulting in inundation of the riverbanks, the portion of the Cross River surveyed as part of the proposed development is considered generally unsuitable for the formation of Otter holts.

Multiple mammal tracks were identified along the mammal underpass associated with the M6 bridge and a drainage channel associated with the Cross River, of which a portion were attributed to Otter. Scat in the form of Otter spraint was identified in two locations: along the mammal underpass and along the Cross River, both of which are located outside the development boundary.

Despite the lack of evidence of underground dwellings attributed to Otter, the Cross River is considered to provide suitable foraging and commuting habitat for Otter and the species is likely to regularly occur here.

Figure 1. Showing the Proposed Development location to the southwest of Athlone in Co. Roscommon.

Figure 2. Showing the Proposed Development site on aerial photography.

Figure 3a. Plan of the Proposed Development, northern section to the permitted Monksland AGI (Dwg Ref: 1379-01-DG-0001)..

Figure 3b. Showing the site plan – southern section with 'Hot Tap' tie in area (Dwg Ref: 1379-01-DG-0001-Sht1).

2. Stage 1 – Screening for Appropriate Assessment

Screening determines whether appropriate assessment is necessary by examining:

1) Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of the site, and;

2) The potential effects of a project or plan, either alone or in combination with other projects or plans, on a Natura 2000 site in view of its conservation objectives and considering whether these effects will be significant.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process in certain circumstances, becomes overly complicated, then the process must proceed to Stage 2 (AA).

The European Commission's "*Assessment of plans and projects in relation to Natura 2000 sites guidance on Article 6(3) and (4) of the Methodological Habitats Directive 92/43/EEC*" published 28 September 2021 states at section 3.1.3, that:

"Identifying the Natura 2000 sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any Natura 2000 sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives. In particular, it should identify:

- *any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;*
- *any Natura 2000 sites within the likely zone of influence of the plan or project Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy;*
- *Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);*
- *Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project".*

The range of Natura 2000 sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a plan or project can affect water flows, fish migration and so forth, even at a great distance. Emissions of pollutants may also have effects over a long distance. Some projects or plans that do not directly affect Natura 2000 sites may still have a significant impact on them if they cause a barrier effect or prevent ecological linkages. This may happen, for example, when plans affect features of the landscape that connect Natura 2000 sites or that may obstruct the movements of species or disrupt the continuity of a fluvial or woodland ecosystem. To determine the possible effects of the plan or project on Natura 2000 sites, it is necessary to identify not only the relevant sites but also the habitats and species that are significantly present within them, as well as the site objectives.

The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of all aspects of the proposed works and possible impacts, including the nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of potential pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Location of ecological features and their sensitivity to the possible impacts.

The potential for source pathway receptor connectivity is first identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in Table 2 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 3 September 2024. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 1 European Sites located within the potential Zone of Influence[6] of the Proposed Development.

Site Code	Site name	Distance (km)[7]
000216	River Shannon Callows SAC	1.55
000440	Lough Ree SAC	2.64
004096	Middle Shannon Callows SPA	1.56
004064	Lough Ree SPA	2.61

[6] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[7] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

The Lough Ree SAC (Site Code 000440) and the Lough Ree SPA (Site Code 004064) both lie 2.6km to the northeast. These two sites lie upstream of Athlone and upstream of the Cross River and its tributaries, relative to where the Proposed Development will pass underneath the river. Lough Ree is in a different WFD SubCatchment (Shannon[Upper]_SC_090). There is no S-P-R connectivity between the potential effects of the proposed pipeline development and Lough Ree SAC and SPA and they are therefore considered to be outside the Zone of Influence of the Proposed development and are screened out at Stage 1 Screening.

A number of other European sites located downstream adjacent to or near the River Shannon are considered including; Pilgrim's Road Esker SAC (001776), Redwood Bog SAC (002353), River Suck Callows SPA (004097), River Little Brosna Callows SPA (004086); Lough Derg, North-East Shore SAC (002241) and Lough Derg (Shannon) SPA (004058). However, these sites are located either on terrestrial habitats (Pilgrim's Road Esker and Redwood Bog) with no pathway or at such a large distance downstream, over 25 river km to the River Suck Callows and over 60 river km to Lough Derg, that they are considered outside the zone of influence of the Proposed development.

The nearest European sites to the Proposed Development are the largely overlapping River Shannon Callows SAC (Site code 000216) and the Middle Shannon Callows SPA (Site code 004096), 1.55km directly to the east.

It may be noted that no Wintering Birds were recorded in off-road or green areas during field surveys in February and it was established that the overall lands are either unsuitable feeding and/or roosting sites for Wintering Birds, due to habitat conditions being dominated by semi-improved agricultural grassland or subject to relatively high levels of grazing disturbance. Therefore, concerns for wintering birds in the Middle Shannon Callows relate to potential negative effects on water quality and supporting habitats.

The pipeline will exit the Hot Tap tie-in and cross over a minor water course which is culverted under the adjacent R446 at Crannagh (Chainage 015 to 020). The water course continues as an open drainage ditch leading to the Newtownflood Stream (EPA code 26N15) c. 1.2 river km downstream, flowing a further 825m to the Cross River plus 470m to the SAC/SPA boundary; a total distance of c.2.5 river km.

The proposed underground transmission gas pipeline crosses a number of field boundaries with associated hedgerows and the most notable water course being the Cross River (Chainage 2155 to 2215), the Cross River ultimately discharges to the River Shannon approximately 3.5 river kilometres downstream. Smaller drainage ditches are also considered with regard to connectivity to the Cross River. On the northern side of the Motorway the pipeline will cross an underground closed piped tributary of the Cross River within the Greener Ideas Facility site (Chainage 2430 to 2435), and cross through a ditch tributary of the Cross River (Chainage 2420 to 2430) using a flume method.

The distance between the crossing of the pipeline at the Cross River and the nearest European sites is c.3.15 river km downstream where the Cross River and surrounding callows are designated as part of the River Shannon Callows SAC (Site code 000216) and the Middle Shannon Callows SPA (Site code 004096).

There will be no direct impacts on Annexed Habitats and as such the primary concern is with regard to hydrological connectivity within the zone of influence of nearer European sites.

The Proposed Development will require a temporary crossing of the Cross River and the creation of Temporary Working Areas within 10m of the river to facilitate and contain works effectively. The construction activity associated with drilling under the Cross River and Railway and Motorway will require surface water management to prevent pollution and degradation of habitats for example from mishandling of construction materials or construction water.

It cannot be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on the following European sites and they are brought forward to Stage 2 AA

- River Shannon Callows SAC (Site code 000216)
- Middle Shannon Callows SPA (Site code 004096)

Construction management will be employed to avoid potential impacts on the Cross River leading to the River Shannon and it is concluded that in line with Departmental Guidance and having regard to ECJ case law and the 'Precautionary Principle', a Natura Impact Statement must be prepared for the purpose of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, 2000, as amended. Stage 2 Appropriate Assessment has been conducted as follows.

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the Zone of influence of the Proposed Development are provided in Table 2 below. Information is taken from the most up to date Conservation Objectives (CO) Document available from the NPWS.

*Table 2 Identification of relevant European sites using Source-Pathway-Receptor model and consideration of potential effects on QIs and SCIs. *Priority habitats.*

Site Name	QI/SCI	Habitat Loss	Water Quality	Disturbance	Displacement	Rationale	Possibility of Significant Effects
River Shannon Callows SAC (000216)	1355 Otter *Lutra lutra*	None	Possible	Unlikely	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	None	Unlikely	None	None	These habitats are located outside the zone of influence of the Proposed Development	None
	6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	None	Unlikely	None	None	These habitats are located outside the zone of influence of the Proposed Development	None
	7230 Alkaline fens	None	None	None	None	These habitats are considered in terms of potential effects on water quality within the zone of influence of the Proposed Development	None
	8240 Limestone pavements*	None	None	None	None	This habitat is located outside the zone of influence of the Proposed Development	None
	91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	None	None	None	None	This habitat is located outside the zone of influence of the Proposed Development	None
Middle Shannon Callows SPA (004096)	A038 Whooper Swan *Cygnus cygnus*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A050 Wigeon *Anas penelope*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management

	A122 Corncrake *Crex crex*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A140 Golden Plover *Pluvialis apricaria*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A142 Lapwing *Vanellus vanellus*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A156 Black-tailed Godwit *Limosa limosa*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A179 Black-headed Gull *Chroicocephalus ridibundus*	None	Possible	None	Unlikely	This species is considered in terms of potential effects on water quality and on food availability within the zone of influence of the Proposed Development	Uncertain in the absence of construction management
	A999 Wetlands	None	Possible	None	Unlikely	This habitat is considered in terms of potential effects on water quality within the zone of influence of the Proposed Development	Uncertain in the absence of construction management

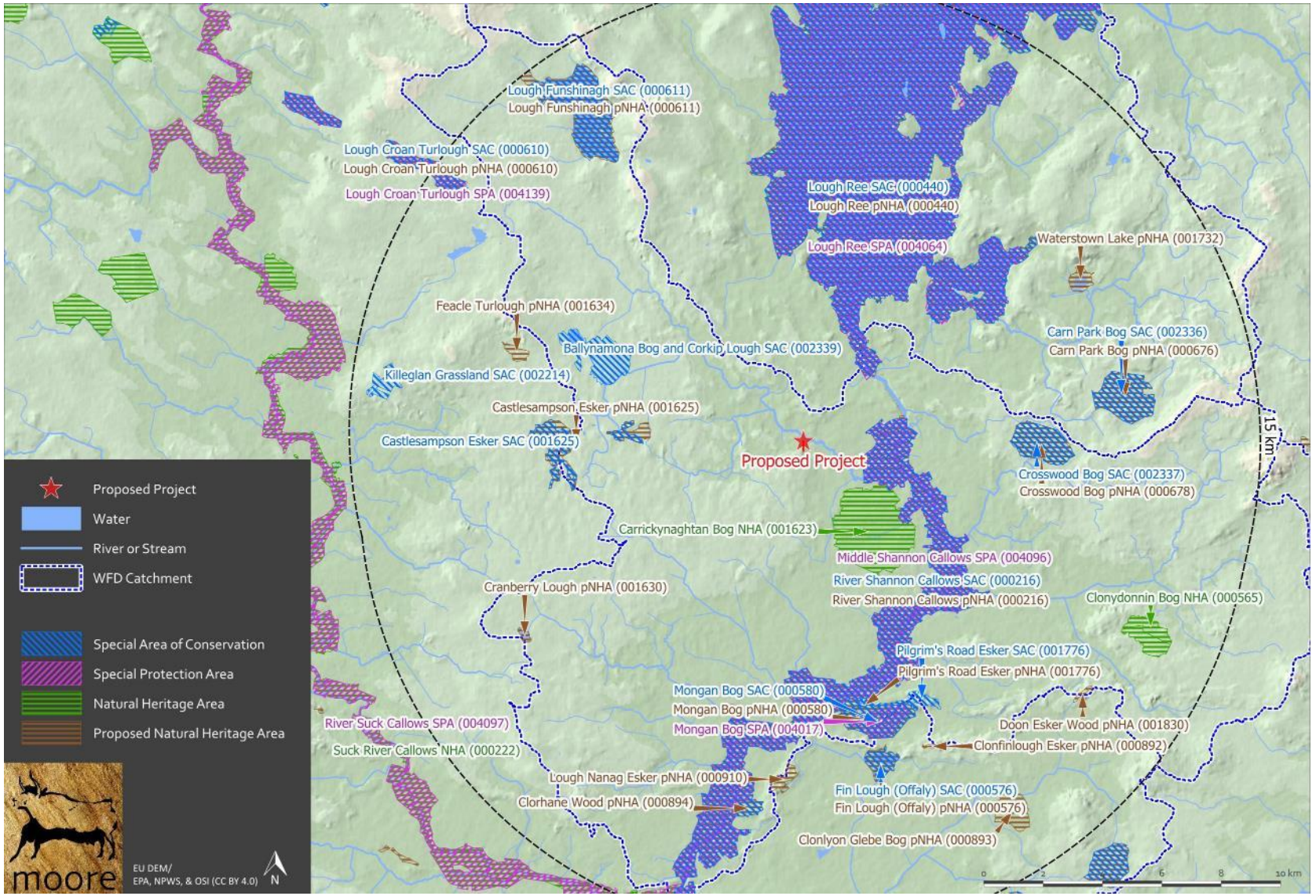

Figure 4. Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Proposed Development.

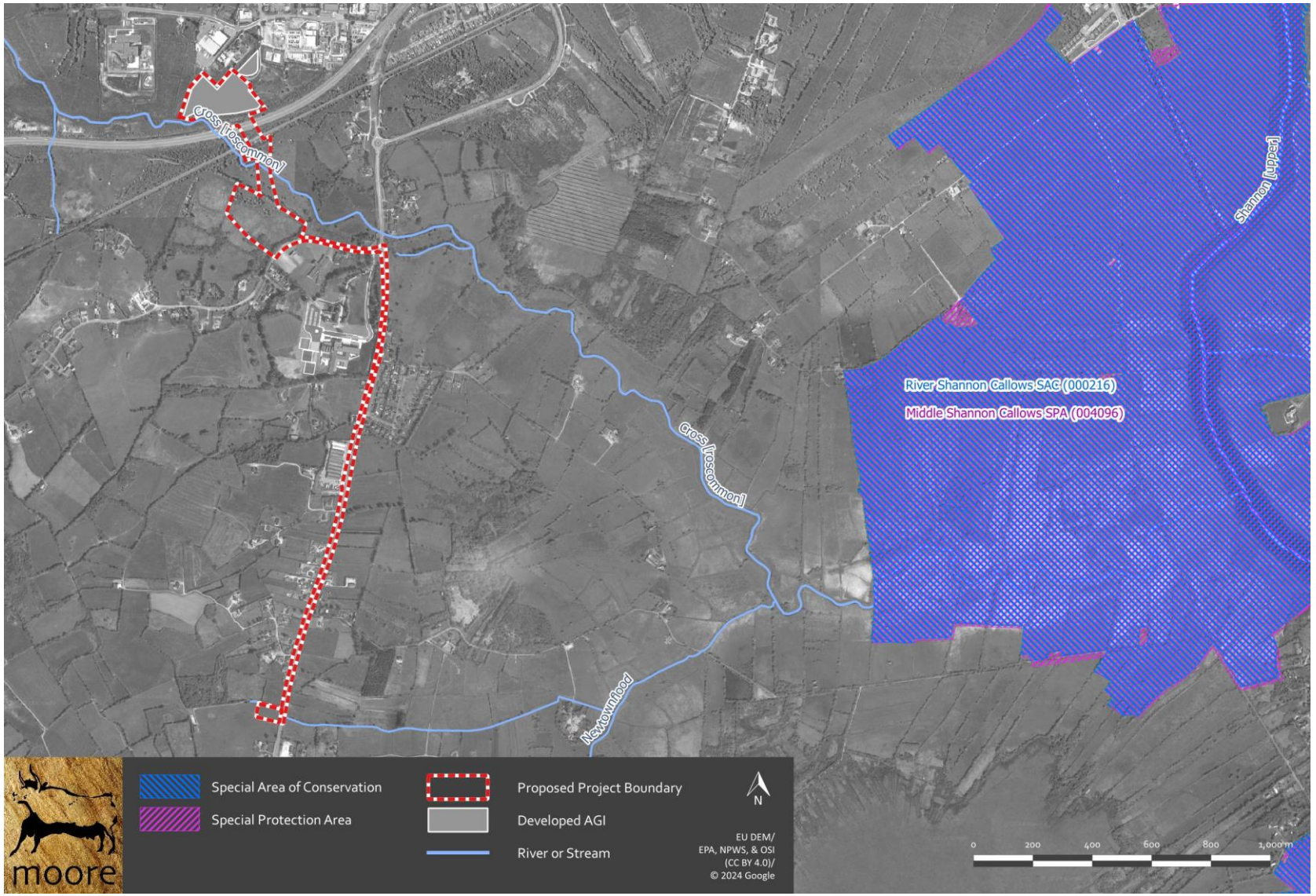

Figure 5. Showing European sites and NHAs/pNHAs within the nearer Potential Zone of Influence of the Proposed Development. *To add rev from Impact GIS*

3. Stage 2 – Appropriate Assessment

This stage considers whether the Proposed Development, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The Stage 2 Appropriate Assessment comprises a scientific examination of the plan / project and the relevant European site; to identify and characterise any possible implications for the site in view of the site's conservation objectives, structure and function; taking account of in combination effects.

3.1. Description of European Sites Potentially Affected

Potential impacts on the following European sites have been identified**:**

3.1.1. River Shannon Callows SAC [000216]

The NPWS provides the following Site Synopsis in relation to the River Shannon Callows SAC (Version date 22nd October 2020, 000216_Rev20.Docx):

The River Shannon Callows is a long and diverse site which consists of seasonally flooded, semi-natural, lowland wet grassland, along and beside the river between the towns of Athlone and Portumna. It is approximately 50 km long and averages about 0.75 km wide (reaching 1.5 km wide in places). Along much of its length the site is bordered by raised bogs (many, but not all, of which are subject to large-scale harvesting), esker ridges and limestone-bedrock hills. The soils grade from silty- alluvial to peat. This site has a common boundary, and is closely associated, with two other sites with similar habitats, River Suck Callows and Little Brosna Callows.
The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

[6410] Molinia Meadows
[6510] Lowland Hay Meadows
[7230] Alkaline Fens
*[8240] Limestone Pavement**
*[91E0] Alluvial Forests**
[1355] Otter (Lutra lutra)

The River Shannon Callows is mainly composed of lowland wet grassland. Different plant communities occur, depending on elevation, and therefore flooding patterns. Two habitats listed on Annex I of the EU Habitats Directive are well-represented within the site — Molinia meadows and lowland hay meadows. The former is characterised by the presence of the Meadow Thistle (Cirsium dissectum) and Purple Moor-grass (Molinia caerulea), while typical species in the latter include Meadow Fescue (Festuca pratensis), Rough Meadow-grass (Poa trivialis), Downy Oat-grass (Avenula pubescens), Common Knapweed (Centaurea nigra), Ribwort Plantain (Plantago lanceolata) and Common Sorrel (Rumex acetosa). In places these two habitats grade into one another.
Low-lying areas of the callows with more prolonged flooding are characterised by Floating Sweet-grass (Glyceria fluitans), Marsh Foxtail (Alopecurus geniculatus) and wetland herbs such as Yellow-cress (Rorippa spp.), Water Forget-me-not (Myosotis scorpioides) and Common Spike-rush (Eleocharis palustris). Most of the callows consist of a plant community characterised by Creeping Bent (Agrostis stolonifera), Brown Sedge (Carex disticha), Common Sedge (Carex nigra), and herbs such as Marsh-marigold (Caltha palustris) and Marsh Bedstraw (Galium palustre), while the more elevated and peaty

areas are characterised by low-growing sedges, particularly Yellow Sedge (Carex flava agg.) and Star Sedge (Carex echinata). All these communities are very diverse in their total number of plant species, and include the scarce species Meadow-rue (Thalictrum flavum), Summer Snowflake (Leucojum aestivum) and Marsh Stitchwort (Stellaria palustris).

A further two Annex I habitats, both listed with priority status, have a minor though important presence within the site. Alluvial forest occurs on a series of alluvial islands just below the ESB weir near Meelick. Several of the islands are dominated by well-grown woodland consisting mainly of Ash (Fraxinus excelsior) and Willows (Salix spp.). The islands are prone to regular flooding from the river.

At Clorhane, an area of limestone pavement represents the only known example in Co. Offaly. It is predominantly colonised by mature Hazel (Corylus avellana) woodland, with areas of open limestone and calcareous grassland interspersed. The open limestone pavement comprises bare or moss -covered rock, or rock with a very thin calcareous soil cover supporting a short grassy turf. The most notable plant in the grassy area is a substantial population of Green-winged Orchid (Orchis morio), which occurs with such species as Sweet Vernal-grass (Anthoxanthum odoratum), Quaking-grass (Briza media), sedges (Carex caryophyllea, C. flacca), Common Bird's- foot-trefoil (Lotus corniculatus), Common Knapweed (Centaurea nigra), and Ribwort Plantain (Plantago lanceolata). Ferns associated with the cracks in the pavement include Asplenium trichomanes, A. ruta-muraria, A. adiantum nigrum and Polypodium australe. Bryophytes include Grimmia apocarpa and Orthotrichum cf. anomalum. Anthills are common within the open grassland. The Hazel wood is well-developed and has herbaceous species such as Primrose (Primula vulgaris), Common Dog-violet (Viola riviniana), Wood-sorrel (Oxalis acetosella) and Herb-Robert (Geranium robertianum). The wood is noted for its luxuriant growth of epiphytic mosses and liverworts, with such species as Neckera crispa and Hylocomium brevirostre. Yew (Taxus baccata) occurs in one area.

Other habitats of smaller area but also of importance within the site are lowland dry grassland, drainage ditches, freshwater marshes and reedbeds. The dry grassland areas, especially where they exist within hay meadows, are species-rich, and of two main types: calcareous grassland on glacial material, and dry grassland on levees of river alluvium. The former can contain many orchid species, Cowslip (Primula veris), abundant Adder's-tongue (Ophioglossum vulgatum) and Spring-sedge (Carex caryophyllea), and both contain an unusually wide variety of grasses, including False Oat-grass (Arrhenatherurn elatius), Yellow Oat-grass (Trisetum flavescens), Meadow Foxtail (Alopecurus pratense), and Meadow Brome (Bromus commutatus). In places Summer Snowflake also occurs.

Good quality habitats on the edge of the callows included in the site are wet broadleaved semi-natural woodland dominated by both Downy Birch (Betula pubescens) and Alder (Alnus glutinosa), and dry broadleaved woodland dominated by Hazel. There are also areas of raised bog, fen on old cut-away bog with Black Bog- rush (Schoenus nigricans), and a 'petrifying stream' with associated species-rich calcareous flush which supports Yellow Sedge (Carex lepidocarpa), Blunt-flowered Rush (Juncus subnodulosus) and Stoneworts (Chara spp.).

Immediately south of Portumna Bridge and south east of the town of Portumna the area of low-lying terrestrial land west of the river comprises are large area of the Annex I habitat alkaline fen. The fen comprises a complex of rich-fen plant communities. Sedges (Carex lasiocarpa, Carex acutiformis) and Bogbean (Menyanthes trifoliata) dominate parts of the fens while other small sedges are common throughout. The orchids Early Marsh Orchid (Dactylorhiza incarnata), Western Marsh Orchid (D. majalis) and Marsh Helleborine (Epipactis palustris) and the red-listed plant species Marsh Pea (Lathyrus palustris) have been recorded within the fen.

Two species which are legally protected under the Flora (Protection) Order, 2015, occur in the site - Opposite-leaved Pondweed (Groenlandia densa) in drainage ditches, and Meadow Barley (Hordeum secalinum) on dry alluvial grassland. This is one of only two known inland sites for Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid is known from dry calcareous grasslands within the site.

The site is of international importance for wintering waterfowl as numbers regularly exceed the 20,000 threshold (mean of 34,985 for five winters 1994/94-1998/99). Of particular note is an internationally important population of Whooper Swans (287). A further five species have populations of national importance (all figures are means for five winters 1995/96-1999/00): Mute Swan (349), Wigeon (2972), Golden Plover (4254), Lapwing (11578) and Black-tailed Godwit (388). Species which occur in numbers of regional of local importance include Bewick's Swan, Tufted Duck, Dunlin, Curlew and Redshank. The population of Dunlin is notable as it is one of the few regular inland flocks in Ireland. Small flocks of

Greenland White-fronted Goose use the Shannon Callows; these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows.
Shoveler (an estimated 12 pairs in 1987) and Black-tailed Godwit (Icelandic race) (one or two pairs in 1987) breed within this site. These species are listed in the Red Data Book as being threatened in Ireland. The scarce bird Quail is also known to breed within the area. The callows has at times held over 40% of the Irish population of the globally endangered Corncrake, although numbers have declined in recent years. A total of 66 calling birds were recorded in 1999, but numbers have dropped significantly since then. The total population of breeding waders (Lapwing, Redshank, Snipe and Curlew) in 1987 was one of three major concentrations in Ireland and Britain. The population of breeding Redshank in the site was estimated to be 10% of the Irish population, making it nationally significant. Also, the Annex I species Merlin and Hen Harrier are regularly reported hunting over the callows during the breeding season and in autumn and winter.
This site holds a population of Otter, a species listed on Annex Il of the E U. Habitats Directive, while the Irish Hare, which is listed in the Irish Red Data Book, is a common sight on the callows.
The Shannon Callows are used for summer dry-stock grazing (mostly cattle, with some sheep and a few horses), and permanent hay meadow. About 30 ha is a nature reserve owned by voluntary conservation bodies. The River Shannon is used increasingly for recreational purposes with coarse angling and boating accounting for much of the visitor numbers. Intermittent and scattered damage to the habitats has occurred due to over-deepening of drains and peat silt deposition, water-skiing, ploughing and neglect of hay meadow (or reversion to pasture). However, none of these damaging activities can yet be said to be having a serious impact. Threats to the quality of the site may come from the siting of boating marinas in areas away from centres of population, fertilising of botanically-rich fields, the use of herbicides, reversion of hay meadow to pasture, neglect of pasture and hay meadow, disturbance of birds by boaters, anglers, birdwatchers and the general tourist. The maintenance of generally high water levels in winter and spring benefits all aspects of the flora and fauna, but in this regard, summer flooding is a threat to breeding birds, and may cause neglect of farming.
The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse with two legally protected species of plants and many scarce species. Excellent examples of two habitats listed on Annex I of the E U. Habitats Directive occur within the site Molinia meadows and lowland hay meadows with good examples of a further three Annex habitats (two with priority status). In winter the site is internationally important for numbers and species of waterfowl. In spring it feeds large numbers of birds on migration, and in summer it holds very large numbers of breeding waders, rare breeding birds and the endangered Corncrake, as well as a very wide variety of more common grassland and wetland birds. The presence of Otter, an Annex Il species, adds further importance to the site.

3.1.2. Middle Shannon Callows SPA [004096]

The NPWS provides the following Site Synopsis in relation to the Middle Shannon Callows (Version date 10th January 2012):

The Middle Shannon Callows SPA is a long and diverse site which extends for approximately 50 km from the town of Athlone to the town of Portumna; it lies within Counties Galway, Roscommon, Westmeath, Offaly and Tipperary. The site averages about 0.75 in width though in places is up to 1.5 Ian wide. Water levels on the site are greatly influenced by the very' small fall between Athlone and Portumna and by the weir at Meelick. The site has extensive areas of callow, or seasonally flooded, semi-natural, lowland wet grassland, along both sides of the river. The callows are mainly too soft for intensive farming but are used for hay or silage or for summer grazing. Other habitats of smaller area which occur alongside the river include lowland dry grassland, freshwater marshes, reedbeds and wet woodland. The diversity of semi-natural habitats present and the sheer size of the site attract an excellent diversity of bird species, including significant populations of several.
The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Corncrake, Golden Plover, Lapwing, Black-tailed Godwit and Black-Headed Gull. It is also of special conservation interest for holding an assemblage of

over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Middle Shannon Callows qualifies as a site of international importance as it regularly supports in excess of 20,000 wintering waterbirds (23,656 four year mean peak for four of the winters between 1995/96 and 1999/2000). The site also supports internationally important populations of Whooper Swan (305 — five year mean peak for the period 1995/96 to 1999/2000) and Black-tailed Godwit (485 four year mean peak for four of the winters between 1995/96 and 1999/2000). Four further species of wintering waterbird occur in numbers of national importance, i.e. Wigeon (3,059), Golden Plover (4,133) Lapwing (13,240) and Black-headed Gull (1,209) all figures are four year mean peaks for four of the winters between 1995/96 and 1999/2000.

The Shannon Callows is the largest site monitored as part of I-WeBS and many parts of it are inaccessible on the ground. Annual monitoring of the wintering waterbirds of the Shannon Callows is undertaken by aerial surveys in January/February with some areas also covered by ground counts. The importance of the site for some species may have been underestimated if count coverage missed the brief spring peaks for these species, e.g. peak counts of Lapwing (23,409) and Black-tailed Godwit (1,096) recorded in the baseline period (1995/96 to 1999 2000) have been considerably higher than the four year means.. A wide range of other species occurs within the site, including Mute Swan (407), Teal (88), Tufted Duck (41), Dunlin (335), Curlew (162) and Redshank (39). Small numbers of Greenland White-fronted Goose use the Shannon Callows (peak 55 in 1998/99) and these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows. The callow grasslands provide optimum feeding grounds for these various species of waterfowl, while many of the birds also roost or rest within the site.

The Shannon Callows is also an important site for breeding waders with the total population on the Shannon and Little Brosna Callows being one of three major concentrations in Ireland and Britain in 1987. Numbers of some species have declined since then but a survey of the Shannon Callows in 2002 recorded the following breeding waders - Lapwing (63 pairs), Redshank (116 pairs), Snipe (139 churring birds) and Curlew (8 pairs). Black-tailed Godwit, a very' rare breeding species in Ireland, nests or attempts to nest in small numbers each year within the site. A further scarce breeding species, Shoveler, also nests in small numbers each year (an estimated 12 pairs in 1987) The Middle Shannon Callows SPA supports a breeding population of Corncrake (19 pairs - five year mean peak between 2003 and 2007, based on records of calling males)

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Quail, a related, scarce species, is also known to breed within the callow grasslands.

A good variety of other bird species are attracted to the site. Birds of prey, including scarce species such as Merlin and wintering Hen Harrier have been recorded hunting over the callows. A range of passerine species associated with grassland and swamp vegetation breed, including Sedge Warbler, Grasshopper Warbler, Skylark and Reed Bunting. Kingfisher is also known to occur within the site. Whinchat, an uncommon breeding species, occurs in small numbers.

The Middle Shannon Callows SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of two species - Whooper Swan and Black-tailed Godwit. In addition, there are four species that have wintering populations of national importance. The site also supports a nationally important breeding population of Corncrake. Of particular note is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Corncrake and Golden Plover.

3.2. Conservation Objectives of European Sites

3.2.1. River Shannon Callows SAC [000216]

Specific Conservation Objectives and Target Notes are set by the NPWS (Version 1. 19th July 2011) for those species which occur within the potential zone of influence of the Proposed Development in the River Shannon Callows SAC (000216) as follows.

1355 Otter *Lutra lutra*

To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Shannon Callows SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 282.1ha	No field survey. Areas mapped to include 10m terrestrial buffer along shorelines and river banks identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 146.7km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

3.2.2. Middle Shannon Callows SPA [004096]

Specific Conservation Objectives and Target Notes are set by the NPWS (Version 1. 19th July 2011) for those habitats and species which occur within the potential zone of influence of the Proposed Development in the Middle Shannon Callows SPA (004096) as follows.

A038 Whooper Swan *Cygnus cygnus*

To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of whooper swan over-wintering in Ireland has increased in the long term, with a 40% population increase from 1991 to 2015 (Lewis et al., 2019). During the baseline assessments to inform SPA designation, 305 whooper swans were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and groundbased surveys for baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). A population of 728 whooper swan was estimated to be using the Middle Shannon Callows SPA in recent years (3 year mean of peak counts from aerial- and ground-based surveys during winters 2018/19 to 2020/21; Edge et al., 2020; NPWS, 2021 and 2022). This represents an estimated population increase of 139% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species feeds on a wide range of aquatic and terrestrial vegetation. Key forage materials include: leaves, with significant consumption of grasses; seeds, including spilled grain; roots; tubers, including potatoes; shoots, including those from winter wheat and other cereals. Key foraging habitats are grasslands (including wet grassland, semi-improved grassland, and intensive grassland), arable stubble, winter cereals, rivers, lakes, turloughs and other wetland habitats. In general, the foraging distance of over-wintering whooper swan from night roosts is estimated to be less than 5km (Scottish Natural Heritage, 2016), although this will vary depending on site and landscape. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Over-night roosting habitat mainly consists primarily of permanent waterbodies, such as rivers, lakes, turloughs, lagoons and other open waterbodies. Roosting is a critical ecological requirement for the over-wintering population. Day-time roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A050 Wigeon *Anas penelope*

To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of over-wintering wigeon in Ireland has declined by 18% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 3,059 wigeon were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground based surveys for baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21 (Edge et al., 2020; NPWS, 2021). A population of 2,759 wigeon was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 10% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This dabbling duck feeds primarily on aquatic vegetation, at surface level in waterbodies or at ground level in wetland habitats. Key forage materials include leaves, stems, stolons, roots, rhizomes, and seeds (including cereals). Key over-wintering habitats are marshes, lagoons, estuaries, coastal bays, lakes, rivers and river floodplains, turloughs and other wetland habitats, as well as pastures. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Wigeon rely primarily on wetlands or waterbodies for roosting. Roosting is a critical ecological requirement for the over-wintering population. When roosting over-night, this species typically utilises a similar range of habitats as noted for foraging. Day-time roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A140 Golden Plover *Pluvialis apricaria*

To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of over-wintering golden plover in Ireland has declined by 54% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 4,133 golden plover were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground based surveys for baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21 (Edge et al., 2020; NPWS, 2021). A population of 5,130 golden plover was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population increase of 24% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species forages exclusively at ground level and relies primarily on surface and sub-surface dwelling invertebrate prey, consuming a wide variety of prey items. The species is reliant on open habitats, including a wide range of wetland habitats such as the edges of lakes, turloughs, river floodplains, lagoons, estuaries, intertidal flats and other coastal wetlands, as well as in grasslands (wet grassland, semi-improved and improved grasslands), stubble fields and ploughed farmlands. While golden plover primarily forage diurnally, the species is also known to feed nocturnally on clear and moonlit nights. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Golden plover roost exclusively at ground level. Roosting is a critical ecological requirement for the over-wintering population. When roosting over-night, this species typically utilises a similar range of habitats as noted for foraging. Day-time roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A142 Lapwing *Vanellus vanellus*

To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of over-wintering lapwing in Ireland has declined by 64% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 13,240 were estimated to be using this SPA (4 year mean of peak counts from aerial surveys for baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21 (Edge et al., 2020; NPWS, 2021). A population of 2,159 was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 84% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species forages exclusively at ground level and relies primarily on surface and sub-surface dwelling invertebrate prey, consuming a wide variety of prey items. The species is reliant on open habitats, including a wide range of wetland habitats such as the edges of lakes, turloughs, river floodplains, lagoons, estuaries, intertidal flats and other coastal wetlands, as well as grasslands (wet grassland, semi-improved and improved grasslands) and ploughed farmlands. While lapwing feed primarily diurnally, the species is also known to feed nocturnally on clear and moonlit nights. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Lapwing roost exclusively at ground level. Roosting is a critical ecological requirement for the over-wintering population. When roosting over-night, this species typically utilises a similar range of habitats as noted for foraging. Day-time roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A156 Black-tailed Godwit *Limosa limosa*

To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of over-wintering black-tailed godwit in Ireland has increased by 92% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 485 black-tailed godwit were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground based surveys for the baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21 (Edge et al., 2020; NPWS, 2021). A population of 300 black-tailed godwit was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 38% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species forages exclusively at ground level and avoids tall, dense vegetation and water deeper than it can stand in. The species relies primarily on surface and sub-surface dwelling invertebrate prey, but also consumes plant materials (e.g. cereal grain). This species consumes a wide variety of invertebrate prey, including polychaete worms, molluscs, crabs, amphipods and larvae (e.g. of Tipulidae). The species is reliant on open habitats, including a wide range of wetland habitats, such as marshes, the shores of lakes and turloughs, river floodplains, lagoons, intertidal estuarine flats (preferring mud flats) and other coastal wetlands, as well as grasslands (wet grassland, semi-improved and improved grasslands). For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	This species roosts exclusively at ground level. Roosting is a critical ecological requirement for the over-wintering population. When roosting over-night, this species typically utilises a similar range of habitats as noted for foraging. Day-time roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A179 Black-headed Gull *Chroicocephalus ridibundus*

To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national waterbird monitoring scheme (Irish Wetland Bird Survey) does not comprehensively monitor this population and therefore robust national population estimates and trends cannot be generated (Lewis et al., 2019).During the baseline assessments to inform SPA designation, 1,209 individuals were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground based surveys for the baseline period 1995/96 to 1999/2000; see NPWS, 2013; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend comes from aerial surveys completed during the winters of 2018/19 and 2020/21 (Edge et al., 2020; NPWS, 2021). A population of 1,055 individuals was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 13% since the baseline period
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas is likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the over-wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain), which can negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Black-headed gull diet can be both broad and opportunistic and includes both aquatic and terrestrial insects, earthworms as well as plant material (e.g. seeds). Key over-wintering habitats include both wetlands and surrounding agricultural areas. For recent information on this species' use of habitats along the Middle Shannon Callows SPA and its environs see Edge et al. (2020)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Black-headed gull rely primarily on wetlands or waterbodies for roosting. Open areas adjacent to such areas may also be important. Roosting is a critical ecological requirement for the over-wintering population. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution. For recent information on this species' use of habitats along the Middle Shannon Callows SPA and its environs, see Edge et al. (2020)
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

A999 Wetlands

To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Wetland habitat area	Hectares	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant loss to the wetland habitat within the SPA would likely significantly negatively impact the regularly-occuring migratory waterbirds that utilise this wetland habitat. Such loss of wetland habitat would likely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occuring migratory waterbird species
Wetland habitat quality and functioning	Quality and function of the wetland habitat	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant impact on the quality, functioning and accessibility of the wetland habitat within the SPA would likely significantly negatively impact the regularly-occuring migratory waterbirds that utilise this wetland habitat. Impacts on wetland quality, functioning and accessibility would llikely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occuring migratory waterbird species

3.3. Consideration of Potential Effects on European Sites

Direct Effects

There will be no direct impacts on the River Shannon Callows SAC or the Middle Shannon Callows SPA as a result of the implementation of the Proposed Development. Direct impact refers to physical impacts defined in the Departmental Guidance as 'Loss of habitat area' and/or 'Habitat Fragmentation'.

There are no direct impacts identified which may affect the Annexed habitats or species of the SAC. The proposed development will have **no impacts** upon the integrity or the site structure of the River Shannon Callows SAC or the Middle Shannon Callows SPA.

Indirect Effects

The primary consideration in terms of source-receptor-pathways for indirect impacts relates to surface water and potential indirect impacts on hydrologically linked habitats and aquatic species.

The potential for impact is considered whereby the Proposed Development would result in a significant detrimental change in surface water quality either alone or in combination with other projects or plans as a result of indirect pollution of surface water. The effect would have to be considered in terms of changes in water quality which would affect the habitats or species for which the River Shannon Callows SAC and the Middle Shannon Callows SPA are designated.

Indirect effects could potentially arise from cementitious water arising from concrete use. However, the amount of concrete or cement to be used in not significant and trucks will not be allowed to wash out on site. Similarly, petrochemical/hydrocarbon use on site will be controlled during construction management. The primary concern is with regard to the discharge of surface water that may accumulate during the excavation and the level of suspended solids in that water. The water is expected to accumulate from natural sources such as groundwater ingress and/or rain water and is not expected to be contaminated except with a degree of silt associated with deep excavations.

The likelihood of impacts on hydrologically connected European sites is low and will be avoided by best practice construction management.

3.3.1. Consideration of Effects on Annexed Species

Otter

No evidence of Otter holts or other protected mammal dwellings were present within or proximal to the development boundary. Evidence of Otter usage in the surrounding area was identified, with two areas of prints and two areas of scat identified. It is likely that Otter utilise the area within and surrounding the proposed development at least periodically, especially in relation to the Cross River. Any loss of trees, hedgerow and earthen bank habitat, alongside artificial lighting will cause a reduction in the suitability of the site and its surroundings for foraging and commuting Otter.

Construction works and site clearance likely will cause some local displacement of Otter as a result of noise. Deep excavations can potentially entrap Otter and other mammals commuting across the site. During construction, should there be pooled water in any excavations there is potential for drowning. Inappropriate or excessive lighting during the construction phase can cause disturbance to mammals

at night. The inappropriate disposal of food wastes during the construction phase can encourage scavenging by mammals (and birds) at the site.

Localised increases in noise and dust levels are likely to occur during the construction phase. In the absence of mitigation, these impacts could give rise to indirect negative impacts on Otter and associated watercourses present in the local environment. Noise will occur through the operation of machinery (excavation, pile driving, etc.). Dust may arise during construction works if dry soil or other material is allowed to become windborne.

The overall effect on Otter as a result of the construction phase of the proposed development in the absence of mitigation is considered to be a **temporary, slight, negative effect** at the local level.

3.3.2. Annex I Birds Directive Birds

The proposed development will cross the Cross River, as well as a number of adjacent fields of Wet Grassland. No species which are conservation objectives of the Middle Shannon Callows SPA were observed during field surveys in February and July 2024. It may be noted that no Wintering Birds were recorded in off-road or green areas during field surveys in February and it was established that the overall lands are either unsuitable feeding and/or roosting sites for Wintering Birds, due to habitat conditions being dominated by semi-improved agricultural grassland or subject to relatively high levels of grazing disturbance

There will be no direct impacts on any of the species for which the Middle Shannon Callows SPA is designated; these being a mix of waders, ducks, gulls and swans, and so the main concern is with regard to water quality and indirect impacts on water quality and food availability.

3.3.3. Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. These supporting roles mainly relate to mobile fauna such as mammals and birds which may use pNHAs and NHAs as “stepping stones” between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account during the AA process.

There is no pathway to the Carrickynaghtan Bog NHA located c. 1.23km to the southeast. The other NHAs and pNHAs identified in Figure 4 are located outside the Zone of Influence, with the exception of the River Shannon Callows pNHA, which is considered under its higher conservation status as a European site.

There are no other natural or semi-natural habitats connected to the site that will be affected by the Proposed Development.

3.4. Mitigation Measures

An Outline CEMP (AWN, 2024) has been compiled to address the works at the construction stage and outline the mitigation, monitoring and control measures to be implemented during the works so as to complete the works in an environmentally safe/sustainable manner.

The Environmental Procedures and the associated control measures will be communicated to all persons working for and on behalf of the Construction Contractor to ensure that all persons are aware of the importance of controlled construction environmental management practices during these works and necessary actions to be taken if works deviate from the environmental procedures.

Appointment of Ecological Clerk of Works

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed at the outset of the construction works to ensure that all environmental and ecological commitments are adhered to throughout the project. The ECoW will be specifically responsible for overseeing the correct implementation of all protective measures for European sites as detailed in the project Natura Impact Statement (NIS). The ECoW will provide guidance on the required mitigations to the Project Team, and in particular the Site Manager. The Site Manager shall ensure that all personnel working on-site are trained and aware of the mitigation measures detailed below. While the Ecological Clerk of Works (ECoW) oversees ecological and environmental compliance, they are not solely responsible. All project staff, including the appointed contractor(s) environmental personnel, share the responsibility for ensuring that environmental best practices are adhered to. The appointed contractor(s) staff must work together to maintain high environmental standards and mitigate impacts, thereby ensuring the success of the project's environmental commitments.

The ECoW will monitor works practices with targeted efforts and attendance at site at project start up to ensure mitigation measures and best practice measures are in place. The ECoW will also be present onsite to monitor excavation and dewatering operations during the project construction phase. The frequency of the ECoW's attendance on site will be dictated by the nature of the works. It is recommended that a weekly site visit be completed during the construction visit, but this may need to be more frequent during specific works practices such as deep excavations or dewatering. The ECoW will be fully appraised of all of the mitigation measures included in the project EcIA and NIS, the accompanying S39A Application and the reasons why they are to be applied.

The appointed ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM), or equivalent, and will have at least 5 years consultancy experience, with

commensurate experience in the role of ECoW for work on similar construction projects. The appointed Ecologist or environmental scientist will have the authority to stop works or temporarily halt or delay ongoing works where further consideration or on-site improvements of mitigation may be necessary.

Measures for the Control of Suspended Solids

The appointed contractor(s) will develop a works specific Sediment Control Plan (SCP), which will form part of the CEMP (the principles of which are detailed here), in advance of any construction activities commencing. The reduction and prevention of suspended solid pollution will be required during all elements of construction.

The following mitigation measures will be implemented as part of the SCP during the construction phase in order to manage the potential impact associated with excavation, stockpiled materials, and reducing sediment runoff at source.

- Prior to commencement of construction the appointed contractor(s) will prepare and adhere to a method statement identifying the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

- The appointed contractor(s) will identify pathways of preferential flow within the project area and implement suitable mitigation measures to ensure contaminated water from the sites is treated before being released into any watercourse. Pathways of preferential flow are influenced by the site's topography and are subject to change as works are undertaken. Consequently, the appointed contractor(s) will need to determine these pathways on site and agreed with the Ecological Clerk of Works (EcoW).

- Clean water will be kept separate from contaminated water to reduce the volume to be treated.

- To prevent rainwater from inundating the construction area through the open pipeline trenches, running track, cut-off drains / interceptor ditches will be installed to intercept uncontaminated surface water and prevent it from entering the work zone.

- Run-off velocities and erosive energy will be reduced by extending the lengths of flow paths for rainwater run-off, building interceptor ditches and channels, and lining steep, unavoidable interceptors or conveyance channels with low-gradient designs to minimise secondary erosion. Additionally, ditches will be lined with filter fabric, rock, or polyethylene to prevent channel erosion.

- Designated areas for stockpiling excavated material will be identified >50 m away from any watercourse. Silt fences will be installed around stockpiles to limit movement of entrained

sediment in surface water runoff. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.

- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.

- Hard surface site roads and public roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.

- A stabilised entranceway consisting of an aggregate on a geotech mesh/fabric base that will be located at any entry or exit point of the construction site. Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.

- Depending on the soil conditions, haul roads will be stabilised utilising materials such as crushed rock, gravel and a layer of geotextiles to improve load-bearing capacity and prevent deformation under heavy traffic. Sediment produced, as a result of the construction processes, will be contained from entering the nearby watercourse using a combination of settlement ponds and silt fences. Regular maintenance, including grading, resurfacing, and drainage management, is required to keep the haul road in good condition during the works.

- Silt fencing will be installed along the working area adjacent to the watercourse, during the construction phase, to ensure no silt entry to the adjacent surface waters. Silt fences will be a permeable woven geotextile fabric (Hy-Tex Terrastop Premium silt fence, or similar) and not a mesh. The silt fences will be positioned to allow an appropriate working area. The silt fencing will be installed as per manufacturer's guidelines.

- Monitoring of the effectiveness of the silt fences will be undertaken and maintenance of the fence will be undertaken if it comes into disrepair or significant amounts of silt begin to build up. Once the construction phase is complete, all fencing will be removed and disposed of to a licensed waste facility.

- Excavation works will not be carried out during or following heavy rainfall (i.e. if there is a yellow weather warning in place or 5mm in a 1-hour period).

- No unnecessary tracking or excavating in grassland/vegetated areas will occur (to prevent sediment laden run-off).

- Excavations will remain open for as little time as possible before placement of fill and be revegetated and remediation as soon as practicable.

- Reinstatement and revegetation will be carried out as soon as practicable after pipeline installation and commissioning is completed.

- Additional remediation works and recontouring activities may be necessary following the completion of the primary works, especially after periods of heavy rainfall. These post-completion measures aim to ensure the stability and success of revegetation. Remediation may involve addressing any erosion or sediment displacement that has occurred due to the rainfall.

- Regular inspection of surface water run-off and sediment control measures will be carried out during the construction phase. A log the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

Measures for the Control and Treatment of Construction Surface Water

No water that has gathered on-site from any source (groundwater, surface water, hydrostatic testing water, or precipitation) will be pumped directly to surface water. All water intercepted on-site will be managed as and controlled for the duration of the construction works to prevent flow of silt-laden surface water flowing into watercourses.

The discharges of groundwater, surface water, hydrostatic testing water, or precipitation ('construction water') from the construction site will be managed and controlled for the duration of the construction works. Construction water that contains a high sediment load and potential for other pollutants will require removal. All discharges to surface waters will be suitably treated prior to discharge. There will be no direct discharge of untreated, silty, or contaminated water from any element of the works without appropriate attenuation, settlement and silt trapping.

Construction water will originate from the dewatering boreholes that will be installed near the Cross River to assist with creating a dry working environment in the pipeline trench and the launch and receiver shafts which facilitate the trenchless crossing. Dewatering from the established boreholes will be managed as required to assist with creating a dry working environment and prevent water from seeping into the excavations (pipeline trench, launch/receiver shaft) and flooding the construction site.

During commissioning there will be discharge of water generated from hydrostatic pressure tests. This water will be managed as required with temporary diversion / pumping to Intermediate Bulk Containers (IBCs) for removal offsite, however this may require on site discharge. This is clean water that has been pumped through the new pipeline under pressure to verify pipeline integrity under I.S. 328.

Construction water will also come from localised pumping of surface water run-off, rainfall, and groundwater ingress in the pipeline trench and launch/receiver shafts during and after heavy rainfall events.

The control and treatment measures for construction water to be implemented include:

- During construction, surface waters drainage, including any excavation dewatering, will be treated to allow settlement prior to discharge.

- A staged treatment system (treatment-train) will be in place during construction works that will ensure the quality of the discharge water is maintained and will comprise hydrocarbon interception for removal of petrol/diesel, settlement tanks for silt removal, and pH balancing (as required). Final treatment will be via appropriately sized silt bags or silt socks, allowing water to settle out or filter before discharge. Used silt bags will be disposed of in an environmentally appropriate manner.

- The level of suspended solids in any discharges to fisheries waters (the Cross river and its tributaries) as a consequence of construction works shall not exceed 25 mg/l of suspended solids, nor result in the deposition of silts on gravels or any element of aquatic flora and fauna (as per IFI (2016) Guidelines).

- Regular inspection of the staged treatment system and discharge quality will be carried out during the construction phase. A of log the regular inspections will be maintained, and any exceedance of 25 mg/l of suspended solids will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

- Whenever possible, water pumped out from excavations will be discharged onto permeable vegetated areas after undergoing sediment removal through filtration.

- When discharging clean water into watercourses, measures like baffles, geotextiles, sediment mat, or riprap will be set up at the discharge point to avoid disturbing the watercourse. The design of the outfalls and the construction method statements for their installation shall be agreed with IFI prior to construction.

- Discharge to surface water (or storm sewer), or discharge to groundwater under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990.

Should any discharge of contaminated construction water be required during the construction phase the discharge will be removed from site via road tanker or similar.

Measures for the Control of Pollution from Other Substances

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge of pollutants to soil, surface water or groundwater systems:

- All plant and machinery will be regularly maintained and serviced to minimise the risk of release of hydrocarbons. This will only be undertaken by qualified personnel;
- Provision of spill kit facilities across the Site, strategically located in high risk areas;
- Where mobile fuel bowsers are used, the following measures will be undertaken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training;
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction working areas (or where possible

off the site) which will be away from surface water drains – a minimum 50 m buffer zone will be adhered to. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

Measures for the Use of Concrete

Any ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash water from cleaning ready-mix concrete wagons and mixers will be contaminated. Wagons and mixers will be washed off-site in a designated washout area. Washout to be removed off site and disposed of appropriately at a licenced facility or reused for concrete creation.

Mitigation in the form of avoiding the use of traditional concrete has been incorporated into the design with precast structures, including temporary bridge , precast marker slabs and concrete jacking pipes, being utilised.

Measures for the Management of Construction Compounds and Materials Storage

The Site Selection for Construction Compounds will be undertaken in accordance with Section 4.1 of the oCEMP.

- All materials will be stored in compounds and will be stored in a manner that is safe and in line with best industry practice. Fuels and chemicals will be stored in an appropriately bunded area/with double skinned tanks.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent cross-contamination.
- Any watercourses and vegetation (trees/hedgerows) to be retained that occur in areas of land that will be used for site compound / storage facilities will be fenced off in advance of establishment works.
- All surface water runoff will be intercepted and directed to the appropriate on-site treatment system for the removal of pollutants prior to discharge. Clean water from compound roofs etc will be kept separate from contaminated water to reduce the volume to be treated.
- Construction materials, including aggregates etc. will be stored a minimum of 40 m distance from the Cross River and 20 m distance from any other surface water body, to prevent any blockage to flood water flow paths from occurring during high rainfall events.

- Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The appointed contractor(s) will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Welfare facilities will be situated at a minimum distance of 40 m distance from the Cross River and 20 m distance from any other surface water body. Foul water from the offices and welfare facilities on the site will be contained within the portable toilets and collected by a licensed waste sewerage contractor.

Measures for the Watercourse Crossings (instream works)

In combination with the measures outlined above, the specific measures below will be implemented at the proposed 2 no. trenched watercourse crossings works (tributary to the Cross River Chainage 2065 to 2075, and Chainage 2420 to 2430):

- Prior to the commencement of works a comprehensive photographic record of the existing condition of the watercourse before any construction activities commence will be undertaken. This documentation will serve as a reference point for reinstalment activities after the completion of works.

- The works area for the flume crossings will be isolated from surface water using sandbags or suitable containment methods to create a seal that span the full width of the watercourse. Heavy gauge plastic may be required in order to ensure a watertight seal is obtained. This keeps a stretch of the river dry and the water is transferred downstream of the works area through gravity fed flumes.

- Sufficiently large flume pipes will be sized to ensure they are capable of accommodation flood flow water volumes are inserted into the watercourse, ensuring they extend past the area of the proposed trench and running track.

- Measures like geotextiles, sediment mat, or riprap will be set up at the downstream of the flume to avoid disturbing the watercourse bed.

- Water pumped out from the isolated stream bed will be and treated before disgrace into the downstream watercourse.

- Following the dewatering process but prior to initiating the construction activities, the exposed bed material will be systematically extracted from sections that will undergo disruption, especially in areas where machinery will be operating.

- Excavated stream bed material will be stockpiled separately from all other material, in a designated area at least 15m from any watercourse.

- De-watering from the isolated stream bed and from within the trench during pipeline works may be required. Water within the contained area contaminated with suspended solids or

other potential pollutants shall not be released directly to surface water. It will be pumped to a suitable treatment system before discharge into the downstream watercourse.

- No vehicles or machinery will cross the streambed.
- Once crossing works are complete, the previously excavated stream bed material will be used to reinstate the stream bed to its original level.
- Should riverbed material excavated be deemed unfit for reinstatement of the riverbed, stone of the same size and geology shall be sourced for reinstatement purposes.
- Prior to reinstatement and removal of the flume the work area will be re-watered to avoid sudden ingress of water causing erosion of the replaced bed or bank material.
- Works to stream banks and instream works to be conducted during times of settled weather and low water flows. Working during times of heavy rainfall will be avoided.
- Watercourse banks will be reformed to their original profile. Geocoir will be laid and secured to the newly profiled bank to avoid any risk of erosion or run-off during high intensity rainfall events. A fast growing, deep rooting grass seed mix will be spread along these banks, as well as native plants and fencing, as appropriate, and agreed with the landowner.
- Once the dams and flume are removed, the watercourse will be allowed to flow normally for the remainder of construction.
- Upon completion of all construction works, all silt fencing will be removed and disposed of to a licensed waste facility.

Regular review of the works area will be undertaken to ensuring effective mitigation of impacts associated with the temporary damming/fluming works by an Environmental Officer or the ECoW. Best practice guidance will be followed for the proposed works including Inland Fisheries Ireland 'Guidelines on protection of fisheries during construction works in and adjacent to waters' (IFI, 2016) and Transport Infrastructure Ireland's 'Guidelines for the crossing of watercourses during the construction of national road schemes' (TII, 2008).

Measures for the protection of the Cross River and Tributaries

These mitigation measures apply to works within proximity to the Cross River and its tributaries in respect of surface water quality and the protection of downstream European sites.

- Prior to works commencing construction contractor(s) temporary works design and Method Statements in relation to the Cross River temporary bridge crossing and crossing under the

Cross River will be agreed in prior to the commencement of these works with the project ECoW and Inland Fisheries Ireland (IFI) and provided to National Parks and Wildlife Services (NPWS).

- IFI will be notified a minimum of 5 working days prior to work commencing in relation to the Cross River temporary bridge crossing and crossing under the Cross River.

  The following IFI representatives are to be notified: Catherine Kerins <catherine.kerins@fisheriesireland.ie> and Arnold Donnelly <arnold.donnelly@fisheriesireland.ie>

- The Method Statements will contain relevant environmental mitigation and control measures and Emergency Response Plan having regard to relevant pollution prevention guidelines in particular the IFI document "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters".

- An appraisal report will be sent to IFI in relation to geotechnical and ground conditions to determine that the crossing is likely to be completed safely without risk to the aquatic environment.

- The abutments for the temporary crossing will be a minimum setback of 2 m from the top of the riverbank.

- The temporary bridge crossing will be constructed in such a way that it drains away from the Cross River and that any runoff is taken away from the River banks on either side.

- Work buffer zones of a minimum of 10 metres will be adhered to along the Cross River (with the exception of the temporary bridge crossing).

- The project silt fences will be installed under the ECoW supervision and will be maintained until all ground disturbance is ceased. Once installed, the silt fence will be inspected regularly during construction and more frequently during heavy rainfall events. The ECoW will also supervise the removal of the silt fences following the completion of the works.

- The works within the immediate vicinity of the cross river, including the trenchless crossing and temporary bridge (Chainage 2100 to 2235) will be confined to May 1st to September 30th inclusive unless otherwise agreed with Inland Fisheries Ireland.

- Launch and receptor shafts for the trenchless crossing will be located a minimum of 20m from the riverbanks of the Cross River.

- Monitoring will be undertaken whilst each watercourse crossing and directional drilling is being completed. This monitoring will be agreed with IFI in advance of works.

In addition to the measures outline above, the mitigation measures outlined in Section 5.1 of the oCEMP for the protection of surface water quality and the aquatic environment will be implemented in full during construction.

Measures for Otters

Suitable fencing will be used to exclude mammals from any hazardous areas including deep excavations, or a means of escape will be provided.

The temporary bridge that will be installed during construction will maintain passage along both sides of the river through the maintenance of minimum 0.6m x 1.0m space on the river side of the temporary abutments.

Standard surface water control measures as outlined in CIRIA (2001), and Section 5.1 of the oCEMP are considered are considered sufficient to avoid any indirect impacts on foraging and commuting Otter as a result of surface water contamination.

Lighting required for health, safety or security reasons, shall be directed away from sensitive ecological features such as the River Cross and surrounding treelines and hedgerows.

Pre-construction survey will be carried out to ensure that the baseline conditions are presented in the current report remain valid. Following CIEEM guidance, mammal surveys have a validity period of 12 to 18 months.

Biosecurity and Invasive Species Management

There will be no spread of invasive species as a result of the proposed development. Biosecurity of both plant and animal species will be employed pre and post works and will form part of the Appointed Contractor's CEMP.

Japanese knotweed recorded at the Derelict Cottage on the R446, which is outside of, but adjacent to the road works area is addressed in an Invasive Species Management Plan by suitably qualified specialist which sets out appropriate controls to be observed by site personnel, should any invasive species be encountered during construction.

Biosecurity protocols in relation to aquatic environment will be implemented by the construction contractor(s) in line with the IFI field work protocol for field survey work (2010). An Invasive Alien Species (IAS) Survey and IAS Management Plan (INVAS, 2024) has been developed that will; be adhered to during construction.

3.5. Assessment of In-Combination Effects

The Commission services' interpretation document 'Managing Natura 2000 sites', makes clear that the phrase 'in combination with other plans or projects' in Article 3(3) refers to cumulative effects caused by the projects or plans that are currently under consideration together with the effects of any existing or proposed projects or plans. When impacts are assessed in combination in this way, it can be established whether or not there may be, overall, an impact which may have significant effects on a Natura 2000 site or which may adversely affect the integrity of a site.

As part of the Appropriate Assessment, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination or cumulative effects/impacts of the proposed development with other such plans and projects on the Natura 2000 site.

3.5.1. Consideration of Plans

The following development plans been reviewed and taken into consideration as part of this assessment:

- Roscommon County Development Plan 2022-2028
- National Biodiversity Action Plan 2023-2027

The review focused on policies and objectives that relate to Natura 2000 sites and natural heritage. Policies and objectives relating to sustainable land use were also reviewed.

Roscommon County Development Plan 2022-2028

Natural Heritage Policy 1: Ensure the protection, conservation and enhancement of the biodiversity of the county

Natural Heritage Policy 2: Support the implementation of the relevant recommendations contained in the National Biodiversity Action Plan, including no net loss in biodiversity, and the All-Ireland Pollinator Plan.

Natural Heritage Policy 3: Implement the County Roscommon Heritage Plan and the Biodiversity Action Plan, or any subsequent plans, in partnership with all relevant stakeholders

Natural Heritage Policy 4: Proposals where woodland, tree or hedgerow removal is proposed will be required to demonstrate a sufficient level of protection to Annex IV species, such as Bats and Otter, in accordance with the Habitats Directive.

Natural Heritage Policy 5: Ecological Impact Assessment (EcIA) will be required for proposed developments likely to significantly impact on natural habitats and/or species, and which are not subject to Environmental Impact Assessment

Natural Heritage Policy 6: Require all new developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features by making provision for local biodiversity (e.g. through provision of swift boxes, bat roost sites, green roofs, etc.) having regard to the recommendations outlined in the Habitat Mapping in Co. Roscommon, 2011 and the County Roscommon Swift Survey, 2020

Natural Heritage Policy 7: Implement Article 6(3) and where necessary Article 6(4) of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. icy 1:Contribute towards the protection from significant adverse effects, of the ecological integrity and the visual, recreational, environmental and amenity value of the County's proposed Natural Heritage Areas (pNHAs) and associated habitats, including any designated Natural Heritage Areas (NHAs) during the lifetime of this Plan.

Natural Heritage Policy 8: Ensure that no plans, programmes, etc. or projects are permitted that give rise to significant cumulative, direct, indirect or secondary impacts on the integrity of European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects, (either individually or in combination with other plans, programmes, etc. or projects).

Natural Heritage Policy 9: Ensure that any plan or project that could have a significant adverse impact (either alone or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted unless in exceptional circumstances.

Natural Heritage Policy 10: Actively promote the conservation and protection of areas designated as an NHA (including proposed sites) and to only consider proposals for development within or affecting an NHA where it can be clearly demonstrated that the proposed development will not have a significant adverse effect on the NHA or pNHA.

The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. There will be no

adverse effects on biodiversity as a result of the Proposed Development, and no in-combination effects in this regard.

National Biodiversity Action Plan 2023-2027

Objective 2 - Meet Urgent Conservation and Restoration Needs

Outcome 2A: The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected area network are enhanced.

Outcome 2B: Biodiversity and ecosystem services in the wider countryside are conserved.

Outcome 2C: All freshwater bodies are of at least 'Good Ecological Status' as defined under the EU Water Framework Directive.

Outcome 2D: Genetic diversity of wild and domesticated species is safeguarded.

Outcome 2E: A National Restoration Plan is in place to meet EU Biodiversity Strategy 2030 nature restoration targets.

Outcome 2F: Biodiversity and ecosystem services in the marine environment are conserved and restored.

Outcome 2G: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment.

There will be no adverse effects on designated sites or biodiversity as a result of the Proposed Development. The Proposed Development will not impact on connectivity within the wider area. No Third Schedule Invasive species were present within the site, and the proposed development will not contribute to the spread of any Third Schedule invasive species.

3.5.2. Consideration of Projects

A review of the National Planning Application Database was undertaken. The first stage of this review confirmed that there were no data outages in the area where the Proposed Development is located. The database was then queried for developments granted planning permission within 1000m of the Proposed Development.

Planning Ref.	Description of development	Comments
21405	Permission for a ground floor extension to existing access corridor with extended roof canopy to set back north façade,	No potential for in-combination or cumulative effects given the inclusion

	alterations to existing west and south façade windows at ground level for additional access and escape doors, external escape stairs and ladder to the south façade, alteration to existing high level windows on the south facade to be replaced with air intake louvres, and provision of exhaust flues and enclosure to the existing roof, and all associated site works at	of Best Practice Construction Management.
21444	Permission to construct a single storey side extension onto existing dwelling house comprising of a "granny flat" unit and all associated site works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
21499	Permission to construct a single storey extension to include an additional classroom and 2 No. SET rooms with a link corridor and all associated site development works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
22199	Permission to construct a dwelling house, domestic garage and septic tank with percolation area and associated site works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
222	Permission for development consisting of the provision of a new warehouse with ancillary accommodation and a loading bay. The building will be set mainly at single level - ground floor (905 sq.m) except small technical mezzanine floor (85 sq.m), total building floor area of 990 sq.m The maximum parapet height for proposed building shall not exceed 20 meters above ground level. Development will include also all associated infrastructure, road works, additional carparking associated with development and removal of existing temporary modular office accommodation (Environmental Impact Statement (EIAR) accompanies this application) at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
22234	Permission for development consisting of revisions and alterations of the permitted development of a gas fired power plant under Planning Register Reference PD/18/256. The revisions and alterations relate to the design of the gas fired power plant and will include a change to the electrical output of the power plant to 102MW with associated balance of plant, equipment and buildings including: an engine hall building with a height of 16.9m, (comprising 5 no. gas engines and ancillary infrastructure), an electrical annex building with a height of 18.7m; A workshop building with a height of 5.1m; An administrative building with a height of 6.1m; A tank farm building with a height of 5.7m; A security hut with a height of 3.3m; An exhaust stack with a height of 28.0m; A gas AGI including an instrument kiosk with a height of 4.9m and an analyser kiosk with a height of 2.9m; 2 no. storage containers, each 2.6m in height, radiator coolers with height of 8.5m; Tanks including 2 X diesel oil storage tanks (volume of 1860m3 combined); SCR urea tank (73m3) ; Lube oil storage tank (3m3); Lube oil maintenance tank (26m3); Pilot oil tank (26m3); Fire water storage tank (563m3); Waste oil effluent tank (16m3); Underground surface water attenuation tank (590m3). The revised proposal will involve a revised red line site boundary to provide for drainage and other works within the adjacent roadway. The development optimises the same access permitted under PD/18/256 and includes 12 no. number parking spaces, footpaths, landscaping; fencing and all other associated site development plant and equipment and other works including surface water and foul wastewater drainage, all on site 1.8 hectares in size (A Natura Impact Statement(NIS) is submitted as part of the planning application) (Permission is sought for a period of 10 years) at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.

22301	Permission for development consisting of partial demolition to the rear of the existing dwelling; construction of a single storey extension to the rear, single storey extension to the side and proposed porch to the front with internal alterations to the existing dwelling; decommissioning of an existing septic tank and provision of a new tertiary treatment system and infiltration area; widening of the existing vehicular entrance; and all ancillary site works at Rathuil, Keelty Townland, Athlone, Co. Roscommon, in accordance with the plans submitted with the application. (Application made for development consisting of partial demolition to the rear of the existing dwelling; construction of two storey extension to the rear, single storey extension to the side and proposed porch to the front with internal alterations to the existing dwelling; decommissioning of an existing septic tank and provision of a new tertiary treatment system and infiltration area; widening of the existing vehicular entrance; and all ancillary site works) at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
22314	Permission for an extension to the existing fire water retention pond consisting of the formation of new pond adjacent to the existing, both linked together with underground pipes, pump cabinet, perimeter fencing and access gates, footpaths, and all associated site works (This application relates to development which comprises an activity which holds an Industrial Emissions Directive Licence (Reg. NO. P0100-02)) at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
22387	Permission for alterations to existing planning permission ref number PD/22/2 to include the following - increase in size of loading dock from 18 sq.m. to 38 sq.m., alteration in parapet height of the one storey building from 6m. to 6.6m., new window on southern elevation to office, new roller shutter forklift access door and high level canopy to southern elevation, new fire escape door to eastern elevation, new enclosed fire escape stair case on southern elevation serving roof and mezzanine level to maximum height of 20m, repositioning of single storey block 2 m. to the east, internal layout alteration to single storey block, omission of electrical switch room to the north west elevation, extension of ramp to loading dock from 10m. to 16m., increase in size of mezzanine area for plant only from 85 sq.m. to 159 sq.m., additional doors to north and western elevation for maintenance access at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
22447	Permission to erect 300.00m2 or 55.00 kWp of photovoltaic panels on the existing roof of manufacturing building with all associated site works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
2360042	Permission: 1. To retain as constructed shared access road 2. To construct domestic dwelling house along with domestic garage, new Treatment system and percolation area and all ancillary site development works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
2360212	Permission for proposed new extension to existing dwelling house, demolition of existing rear extension, proposed domestic garage and all ancillary works at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.
245	Retention Permission for development consisting of change of use of 139.7m2 single storey office Building 14 originally a dwelling house constructed prior to 1979 to its current use as an office since 2000. This application related to development which comprises an activity which holds an Industrial Direct License (Reg. No P010002) at	No potential for in-combination or cumulative effects given the inclusion of Best Practice Construction Management.

3.5.3. Conclusion of In-Combination Assessment

There are no predicted in-combination effects from the Proposed Development given the successful employment of industry standard best practice construction management measures.

The Roscommon County Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same zone of impact of the Proposed Development site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way any, in-combination impacts with Plans or Projects for the development area and surrounding townlands in which the development site is located, would be avoided.

Any new applications for the Proposed Development area will be initially assessed on a case by case basis initially by Roscommon County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

4. Natura Impact Statement & Conclusion

This NIS has reviewed the predicted impacts arising from the Proposed Development and found that with the implementation of appropriate mitigation measures specifically with regard to construction surface water treatment, the proposed development will not result in significant adverse effect on the integrity of the European sites considered in this assessment.

It is the conclusion of this NIS, on the basis of the best scientific knowledge available, and with the implementation of the mitigation and restriction measures set out under Section 3.4, that the possibility of any adverse effects on the integrity of the European Sites considered in this NIS (having regard to their conservation objectives), or on the integrity of any other European Sites (having regard to their conservation objectives,) arising from the proposed development, either alone or in combination with other plans or projects, can be excluded beyond reasonable scientific doubt.

A final determination will be made by the competent authority in this regard.

5. References

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of plans and projects in Ireland (as amended February 2010).

European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Brussels 28.9.21.

European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, Brussels 12.10.21.

European Commission (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2022) Conservation Objectives: River Shannon Callows SAC 000216. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2022) Conservation Objectives: Middle Shannon Callows SPA 004096. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2024) National Parks and Wildlife Service Metadata available online at https://www.npws.ie/maps-and-data

Office-of-the-Planning-Regulator (2021) Appropriate Assessment Screening for Development Management OPR Practice Note PN01. March 2021

Appendix 1 Report On Mammals Including Otters - O'Donnell Environmental, 2024.

Bat and Otter Survey Report

Gas to GIL Power Athlone - Monksland AGI, Co. Roscommon.

September 2024

Prepared for:

Gas Networks Ireland

CIEEM REGISTERED PRACTICE 2024-2025

O'DONNELL ENVIRONMENTAL

Summary

Project: Gas to GIL Power Athlone - Monksland AGI, Co. Roscommon.

Coordinates: N 00574 40630 (IG); 53.416010, -7.9920977 (WGS84).

Report by: Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM.

Statement of Competence: O'Donnell Environmental is an independent environmental consultancy established by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM in 2019. O'Donnell Environmental is a Chartered Institute of Ecology and Environmental Management (CIEEM) 'Registered Practice' which demonstrates our commitment to high professional standards, accountability and the delivery of the best outcomes for biodiversity and our Clients.

Tom O'Donnell is a Chartered Environmentalist and a full member of the Chartered Institute of Ecology and Environmental Management. He was awarded a BSc in Environmental and Earth System Science [Applied Ecology] in 2007 and an MSc in Ecological Assessment in 2009, both from UCC. Tom has 15 years professional experience in the environmental industry, including working on projects such as windfarms, overhead power lines, roads, cycleways and residential developments. Tom is licensed by NPWS for roost disturbance (Ref: DER/BAT 2023-16) and to capture bats (C25/2023).

Colm Breslin BSc (Hons) is a Qualifying member of the Chartered Institute of Ecology and Environmental Management. He was awarded a BSc in Biological, Earth and Environmental Sciences [Ecology and Environmental Biology] in 2023 from UCC. Colm has experience in habitat mapping, bat activity surveys and preliminary roost assessments for a variety of windfarm and residential developments. Colm is licenced by NPWS for roost disturbance (Ref: DER/BAT 2024-09), to capture bats (C03/2024), and to photograph bats (008/2024).

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1 Introduction

O'Donnell Environmental Ltd. was commissioned by Gas Networks Ireland to undertake dedicated bat and Otter surveys within the zone of influence of the proposed Gas to GIL Power Athlone project.

The proposed development will consist of the following aspects:

- Installation of 2.488km of buried 200NB carbon steel pipe.
- Installation of hot tap offtake valve arrangement at tie in location.
- Installation of below ground isolation valve and below ground pig launching connection to facilitate future pigging operations, at the hot tap connection into the existing transmission pipeline
- Tie into the permitted above ground compound (AGI) (named Monksland AGI) adjacent the customer's location, this will be located within a fenced enclosure, to accommodate the pressure reduction station (AGI).

The proposed pipeline route is outlined in **Figure 2.1** below and involves a long section of conventional pipeline installation in open trench at nominal depth, a trenchless crossing of the Cross River (RVX01), and a trenchless crossing of a Railway Line (RLX01) and the M6 Motorway (RDX01). The new pipeline shall tie into the existing 750 NB 'Pipeline to the West' adjacent the R446 road south of Athlone town. The proposed pipeline shall run approximately 1.6 km north through public road R446 and then approx. 300m West along minor road L2027. It will then travel north through privately owned agricultural land and will pass under the Cross River south of where the river crosses the railway line.

The pipeline shall be installed under the river using trenchless methods. After crossing the river, the route shall continue north to a point where the M6 motorway runs alongside the railway. The pipeline shall be installed under the railway and motorway at this point using trenchless methods.

The pipeline shall terminate at the new Monksland AGI compound located on the north side of the motorway within 250m of the proposed crossing point.

2 Methodology

Surveys targeted bats and Otter and assessed the likelihood of impacts arising on these receptors as a result of the proposed development. Bat surveys were conducted through desk study, preliminary roost assessment (PRA), ground-level tree assessment (GLTA) and passive monitoring. Otter surveys were conducted through daytime mammal walkovers. All surveys were informed through multiple site visits between Autumn 2023 and Summer 2024. Each of these elements are described below.

2.1 BATS

2.1.1 Desktop Review

A desktop review of publicly available relevant data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites[1]. The National Biodiversity Data Centre was reviewed for relevant data, specifically i) existing species records for the 10km square in which the study site is located (N04) and ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy et al. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

O'Donnell Environmental requested bat roost data from Bat Conservation Ireland's database on 25th March 2024. Any relevant roosting locations were reviewed in relation to the emerging scheme design.

2.1.2 Potential Roost Assessment

Detailed visual assessment of relevant trees and structures was carried out following guidance set out in 'Bat Surveys for Professional Ecologists: Good Practice Guidelines', Collins (2023). Targeted surveys were carried out to determine the presence of bats or Potential Roosting Features (PRFs) where proposed works may impact a PRF directly or indirectly. All trees and structures within the zone of influence (defined as within the site boundary for bat species) were considered for suitability for roosing bats.

Trees

Daytime visual assessments of trees within the proposed development site were carried out by Tom O'Donnell and Colm Breslin on 11th October 2023, 15th February 2024, 9th July 2024 and 25th July 2024 following guidance presented in Collins (2023), to describe the potential bat roosting suitability of the trees within the area of interest. Winter is the optimal period for carrying out these surveys when reduced leaf cover maximises light penetration and minimises obstruction of vision (BTHK, 2018; Collins, 2023). Surveys were completed within the optimal survey season and supplemented by additional site visits in other seasons.

Safely accessible trees of relevance were tagged by O'Donnell Environmental (Tag No. 49 & 50). Trees contained within the site boundary were surveyed from ground level using binoculars, torches and endoscope as necessary to identify possible roosting locations. The survey was non-destructive, and relevant Potential Roost Features (PRFs) were visually inspected where

[1] Accessed 13th May 2024.

safely possible to identify any evidence of bat roosting. Signs of bat use include bat droppings, feeding remains, potential bat access points identified by characteristic staining and scratches, noise made by bats etc.

While tree surveys can confirm the presence of roosting bats, they often cannot conclusively confirm the absence of roosting bats (Collins, 2023). In trees in general, and in the winter in particular, evidence of recent bat occupation can rapidly disappear. For example, droppings can persist in buildings for many years while they generally do not persist for long in tree roosts. Tree roosts have been shown to be used in a more transient manner than buildings with many species (including Leisler's Bat) exhibiting roost switching behaviour (Collins, 2023). For example, Waters et al. (1999) observed roost switching in Leisler's Bats every 2 to 10 days during the active season.

In relation to trees, Collins (2023) has moved away from the subjective approach used in Collins (2016) for categorising individual PRFs in trees. Collins (2023) acknowledges the subjectivity of the previous approach, and the many constraints associated with surveying trees for bats. The preliminary ecological appraisal (now termed the Daytime Bat Walkover (DBW)) of trees present on the proposed development site follows the categorisations scheme outlined in **Table 2.1**.

Table 2.1. Scheme for describing the potential suitability of PRFs in trees on a proposed development site for bats.

Suitability	Description
None	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further Assessment Required to establish if PRFs are present in the tree.
PRF	A tree with at least one PRF present.

Following the confirmation of the possible presence of PRFs in trees, the assessment of suitability is further refined during the Ground Level Tree Assessment (GLTA), whereby the potential suitability of such PRFs is now categorised according to the system detailed in **Table 2.2** below.

Table 2.2. Scheme for describing the potential suitability of PRFs in trees for bats.

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony.

Following Collins (2023), trees displaying PRF-M suitability are subject to further survey including emergence surveys and PRF aerial inspection surveys.

Structures

Daytime visual assessments of the structures with roosting suitability and potential to be impacted by the proposed works were carried out concurrently with trees. The proposed development involves works in proximity of two bridge structures: the M6 bridge and railway bridge (see **Figure 2.1**; **Plates 3.5-3.6**).

Structural surveys of bridges involved ground-level surveys using binoculars where safely accessible. Full access was possible to the M6 bridge due to constructed mammal passes. The

railway bridge was not safely accessible and was thus surveyed from the most proximal point along the riverbank using binoculars and high-luminosity torches.

The potential suitability of structures for roosting bats present at the proposed development site was classified according to the guidelines in Collins (2023), see **Table 2.3** below.

Table 2.3. Scheme for describing the potential suitability of structures for bats.

Suitability	Description
None	No habitat features likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels.)
Negligible	No obvious habitat features likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable and not a classic cool/stable hibernation site, but could be used by individual hibernating bats.
Moderate	A structure with one or more potential roost sites that could be used by bats due their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.

After 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)', Collins (2023).

2.1.3 Passive Bat Monitoring

Bat activity surveys were carried out passively to quantify local bat activity levels, species richness and the significance of interaction within the development footprint. Full-spectrum passive bat detectors were deployed for two active bat seasons: autumn 2023 and summer 2024 (see **Table 2.4** for details).

Table 2.4. Passive bat survey summary.

Monitoring Station	Survey Period	Survey Nights
Autumn 2023		
Bat_01	11th October – 5th November 2023	25
Bat_02	11th October – 5th November 2023	25
Summer 2024		
Bat_03	9th July – 25th July 2024	16
Bat_04	9th July – 12th July 2024	3
Bat_05	9th July – 25th July 2024	16
Bat_06	9th July – 25th July 2024	16

Species identification was aided by post hoc sonogram analysis using Wildlife Acoustics' Kaleidoscope Professional software (v. 5.6.6) and British Trust for Ornithology (BTO) 'Acoustic Pipeline' sound analysis tool. Automatic identifications were manually reviewed and verified following the parameters set out in Russ (2012; 2021) and Middleton et al. (2014).

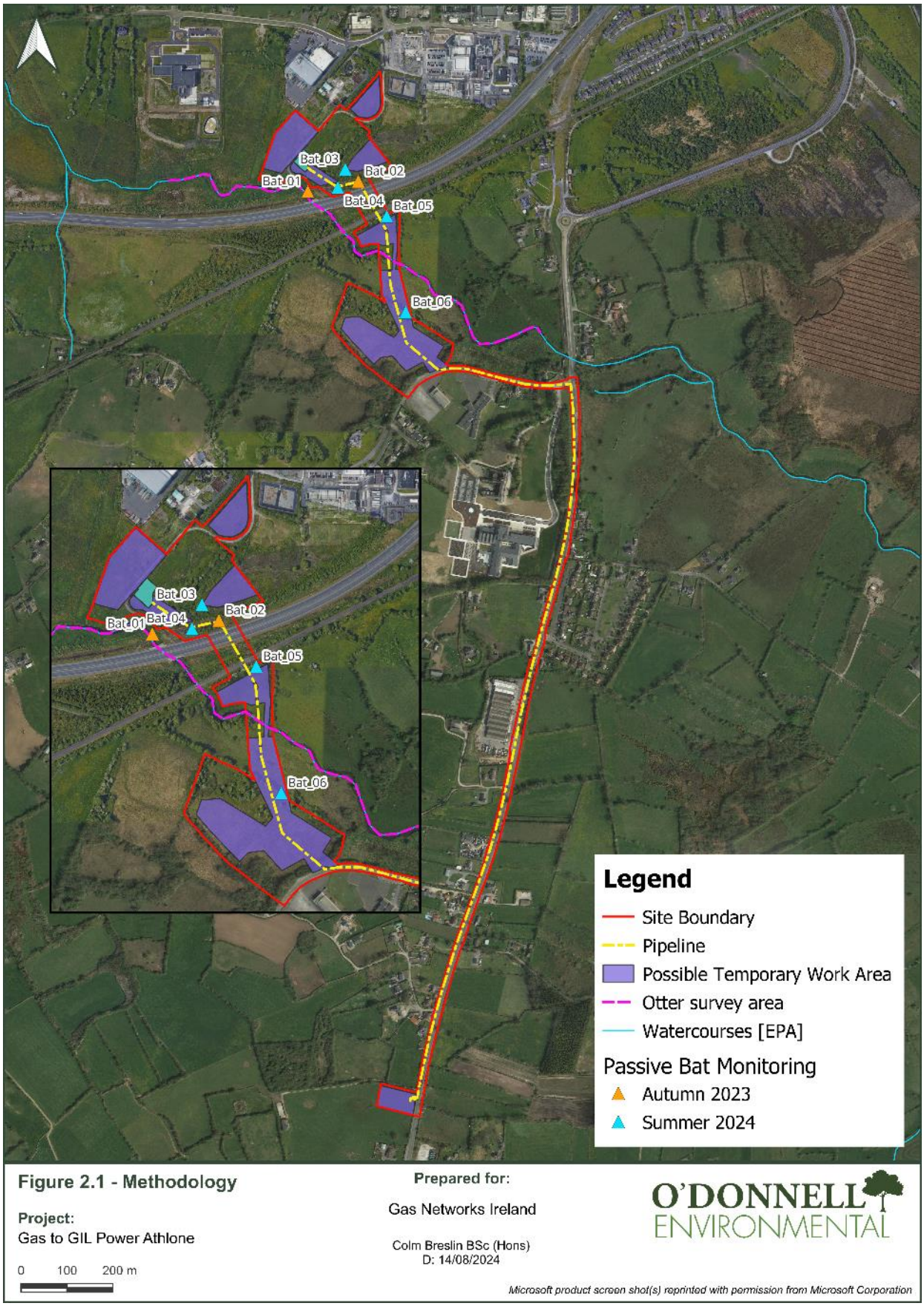
2.2 OTTER

Dedicated Otter surveys were carried out on 11th October 2023, 15th February 2024, 9th July 2024 and 25th July 2024. Surveys took place during the optimal time period and in accordance

with best practices standards (e.g. 'Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes' (NRA, 2006). Surveys aimed to identify any Otter holts within or proximal to the alignment up to a minimum of 200m upstream and downstream of the River Cross and its associated drainage channels. See **Figure 3.1** for Otter survey locations.

2.3 LIMITATIONS

All surveys took place during the optimal survey seasons and were complemented by additional site visits. Despite the railway bridge (B_02) not being directly accessible, the interior arches were clearly visible from the most proximal point along the River Cross. There is considered to be no limitations associated with the current report.


Bat_03
Bat_02
Bat_01
Bat_04
Bat_05
Bat_06
Legend
Site Boundary
Pipeline
Possible Temporary Work Area
Otter survey area
Watercourses [EPA]
Passive Bat Monitoring
Autumn 2023
Summer 2024
Figure 2.1 - Methodology
Project:
Gas to GIL Power Athlone
0 100 200 m
Prepared for:
Gas Networks Ireland
Colm Breslin BSc (Hons)
D: 14/08/2024
O'DONNELL ENVIRONMENTAL
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

3 Results

The proposed development involves works spanning the River Cross, alongside drainage channels associated with the river. The proposed works area to the north consists largely of agricultural grassland with areas of marginal wet grassland which is bordered by treelines and hedgerows. A large proportion of the proposed works will take place within the R446 and L2027 public roads. The proposed development area is largely unlit and experiences minimal light pollution, with the exception of areas bordering public roadways and business parks.

3.1 BATS

3.1.1 Desktop Review

Special Areas of Conservation (SAC) and Special Protection Areas for birds (SPA) are those sites that are deemed to be of European (i.e. international) importance. They form part of a network of sites to be designated across Europe in order to protect biodiversity within the community, known as Natura 2000 sites. No internationally designated sites within 15km of the proposed development contain bats as their conservation interest and are therefore not relevant to the current assessment.

At a national level, the basic unit of conservation is the Natural Heritage Area or proposed National Heritage Area (NHA/pNHA). NHAs are designated to protect habitats, flora, fauna and geological sites of national importance. No nationally designated sites within 15km of the proposed development contain bats as their conservation interest and are therefore not relevant to the current assessment.

National Biodiversity Data Centre (NBDC) holds previous records of bat presence from within the 10km square (N04) in which the proposed site is located. A total of 6 species were recorded. These records are for:

- Brown Long-eared Bat
- Natterer's Bat
- Common Pipistrelle
- Soprano Pipistrelle
- Daubenton's Bat
- Whiskered Bat

It is important to note that an absence of other bat species records is likely reflective of a lack of surveys undertaken to date rather than absence of bat species.

The overall bat suitability index value (31.11) according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011) suggests the landscape in which the proposed site is located is of moderate to high suitability for bats in general. Species specific scores are detailed in **Table 3.1**. The Annex II (EU Habitats Directive) listed bat species, Lesser Horseshoe Bat, is assigned a score of '3' despite being outside their known range due to the presence of suitable landscape features.

Table 3.1 - Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011).

Common name	Scientific name	Suitability index
All bats		*31.11*
Soprano pipistrelle	*Pipistrellus pygmaeus*	46
Brown long-eared bat	*Plecotus auritus*	39
Common pipistrelle	*Pipistrellus pipistrellus*	45
Lesser horseshoe bat	*Rhinolophus hipposideros*	3
Leisler's bat	*Nyctalus leisleri*	44
Whiskered bat	*Myotis mystacinus*	19
Daubenton's bat	*Myotis daubentonii*	32
Nathusiius pipistrelle	*Pipistrellus nauthusii*	16
Natterer's bat	*Myotis nattererii*	36

Following a data request of the BCI database on 25th March 2024, a single known roosting site is located within 10km of the proposed development. This roosting site is located within a private residence approximately 4.3km northwest of the proposed development within Athlone town. This roost is attributed to the following species: *Pipistrellus pygmaeus*, *Nyctalus leisleri*, *Myotis* spp., *Myotis natterreri*, *Pipistrellus pipistrellus*, and *Plecotus auritus*.

Collins (2023) defines the 'Core sustenance Zone' (CSZ) as the area surrounding a bat roost within which habitat availability and quality possess significant influence on the resiliency and conservation status of the roost. This metric is species-specific and can be utilised to indicate the area within which developments may impact the flight-paths and foraging habitat of bat roosts. No roosts within the BCI database and CSZs associated with each species (between 2-4km radius) overlap with the proposed development. Additionally, the identified roost is located on the other side of Athlone town and buffered by considerable associated light and noise pollution.

3.1.2 Preliminary Roost Assessment

Trees and man-made structures were surveyed within the proposed site boundary for their suitability in providing for roosting bats. Full access was provided by the client. Results are discussed separately below.

Trees

All trees within and proximal to the proposed development were surveyed from ground-level for the suitability for roosting bats. Results of ground level surveys of trees are discussed below (see **Table 3.2**) and shown in **Figure 3.1**. Due to the large number of trees surveyed, only trees showing 'PRF-I' suitability and above are shown in **Figure 3.1**. The only trees of relevance in relation to the proposed development were located at the northern end of the proposed development. The remaining trees, including those located along the R446 and L2027, were considered and no suitability for roosting was identified. The zone of influence associated with in-road laying of pipeline is considered to be limited and mostly restricted to the road corridor.

Plate 3.1 – Trees adjacent to the GIL Power Athlone Site.

The survey was non-destructive and no roosting bats were encountered during survey and no unoccupied roosts which contained signs of bats were encountered. It is considered unlikely that any tree on-site has potential for significant roosting much as maternity, but occasional roosting by individual or small number of bats is likely to occur, at least occasionally. Four trees displayed 'PRF-I' suitability for supporting individual or small numbers of bats, generally characterised by sub-optimal roosting features (see **Table 3.2**; **Figure 3.1**). Over time, the value of many of these roosting features to bats may increase.

The remaining trees displayed no roosting potential following Collins (2023), and largely took the form of early mature specimens with narrows stems and simple growth displaying no signs of damage and therefore roosting features (see **Plate 3.1** for examples). However, when considered cumulatively, these trees form a locally important network of foraging and commuting habitat within and surrounding the proposed development.

Plate 3.2 – Mature Hawthorne (Tag No. 49).

Plate 3.3 – Mature Ash (No. UT_01).

Plate 3.4 – Mature Hawthorne (Tag No. 50).

Plate 3.5 – Tree group consisting of mature Ash and Sycamore (No. UT_02).

A number of bat species, including Leisler's Bats and Soprano and Common Pipistrelles, roost in trees all year round. In winter most species roost individually, but Leisler's Bat and Soprano Pipistrelle have been recorded roosting in groups in the UK (BTHK, 2018). During the spring and summer period maternity colonies form and these roosts are of greatest conservation importance. Some bat species can roost in trees where suitable roosts are present. Leisler's Bats occasionally form maternity roosts in trees, but are normally found in buildings (Collins, 2023).

In Ireland potential bat roosting features are often associated with decay in trees. While trees of any age can contain suitable bat roosting features, typically roosts are found in mature and veteran trees. Decay in trees often begins with damage, where a limb tears off for example or where damage is caused by an external factor such as badly executed limb removal. Where trees are well maintained, from an arboriculture perspective, they often do not contain these features, and therefore typically do not present many optimal roosting opportunities for bats. Equally, young and vigorously growing trees often do not contain decay associated with rot holes, tear-outs etc. and when damage occurs the trees are generally capable of self-healing.

Table 3.2 – Bat Tree Survey Results

Tree No.	Species	PRF Survey Comment	Suitability
T_49	Hawthorne	Mature specimen with complex growth form. Narrow diameter main stems covered in dead interweaving ivy stems on northern aspect. Additional minor wounds including tear-offs due to cattle with potential to increase in roosting suitability in the future.	PRF-I
T_50	Hawthorne	Mature specimen with Thick interweaving ivy stems and Low ivy cover. Additional minor damage in the form of tear-offs and minor rot-holes of shallow depth which will increase in roosting value through time.	PRF-I
UT_01	Ash	Mature specimen bordering drainage channel. Evidence of Ash dieback disease. Dense ivy cover extending up the majority of main stem. View of PRFs at height restricted.	PRF-I
UT_02	Ash, Sycamore	Tree group consisting of two mature Ash and Sycamore specimens covered in dense ivy. View of PRFs at height restricted as a result.	PRF-I

*Note: *UT refers to untagged trees which were not safely accessible for tagging.*

Structures

Two structures, consisting of the M6 bridge and railway bridge (see **Plates 3.6-3.7**; **Figure 3.1** for locations), are present proximal to the proposed development that display suitability for roosting bats. These structures were surveyed from ground-level using binoculars and torches to identify possible roosting locations. Due to the deep and fast flowing waters of the River Cross, the interior arches of the railway bridge was not safely accessible and thus surveyed from the most proximal point along the riverbank.

The M6 bridge (B_01) consists of a single-span concrete structure that forms a part of the M6 roadway and spans the River Cross. It is located approximately 33m from the site boundary and 54m from the proposed pipeline at their nearest points. The pre-cast concrete forms provide limited suitability for roosting bats. No artificial bat roosts are present within the bridge. Mammal passes along the River Cross allowed for the assessment of interior spaces. Numerous expansion joints between concrete forms provide crevices suitable for small numbers of roosting bats. Overall, the M6 bridge presents 'low' suitability for roosting bats following Collins (2023).

The railway bridge (B_02) consists of a single-span stonework structure crossing the River Cross, forming a portion of the Midland Great Western Railway Main Line. This structure is located 22m from the site boundary and 82m from the proposed pipeline at their nearest points. Due to deep and fast-flowing waters of the River Cross, close inspection of the arches was not possible. Binoculars and high-luminosity torches were used from the most proximal point along the riverbank to assess the bridge for bat roosting suitability. Overall, the railway bridge is well-maintained and appears recently well-pointed with no obvious gaps or crevices present. However, features of roosting suitability cannot be discounted entirely. Based on available information, the railway bridge presents 'negligible' suitability for roosting bats following Collins (2023).

Plate 3.6 – M6 Bridge (B_01)

Plate 3.7 – Railway Bridge (B_02)

Plate 3.8 – M6 Bridge (B_01) with numerous longitudinal expansion joints suitable for small numbers of crevice dwelling bats. View of railway bridge in background of photo.

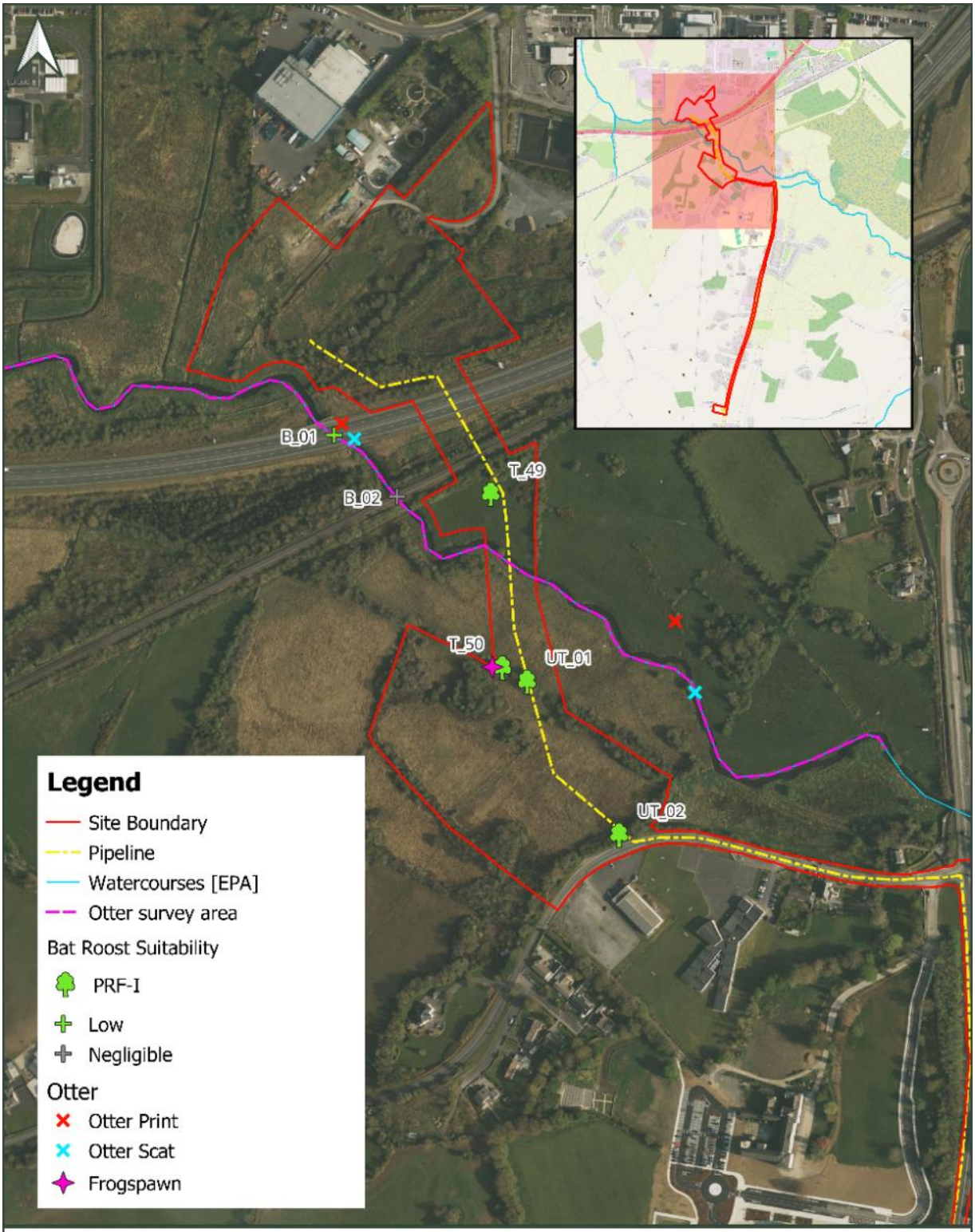


Figure 3.1 - Survey Results

Project:
Gas to GIL Power Athlone

0 75 150 m

Prepared for:
Gas Networks Ireland

Colm Breslin BSc (Hons)
D: 14/08/2024

3.1.3 Passive Bat Monitoring

Full-spectrum passive bat detectors were deployed at six monitoring stations across two survey seasons (see **Table 2.4** for details) and are discussed separately below. Overall, a relatively high level of bat activity was recorded. Of the nine confirmed Irish species known to occur nationally, seven were recorded within the proposed development; this represents a high diversity of species. The Annex II listed Lesser Horseshoe Bat was not recorded, and the proposed development is outside their current range despite the presence of suitable landscape. The full results of passive bat monitoring are presented in **Tables 3.3** and **3.4** below.

Autumn 2023

A total of seven of the nine known resident Irish bat species were recorded during the autumn 2024 survey season. The Annex II listed Lesser Horseshoe Bat was not recorded, and the proposed development is outside their current range despite the presence of suitable landscape. A total of 196 registrations were recorded across all two passive monitoring stations. The majority of these registrations were recorded at Bat_01 (65.8%), with Bat_02 making up the final 34.2% of registrations. Activity levels appear relatively inconsistent throughout the survey period with some nights showing no registrations (see **Figure 3.2**). It should be noted that this passive monitoring period took place at the end of the active bat season and likely included some poor weather nights.

The results of autumn 2023 passive bat monitoring are presented in **Table 3.3**. The majority of registrations comprised common and widespread species as would be expected in an Irish context such as Soprano Pipistrelle and Common Pipistrelle. Soprano Pipistrelle was the most commonly recorded species, accounting for 32.7% of all registrations. The majority of Soprano Pipistrelle registrations were recorded at Bat_01 (55.2%) followed by Bat_02 (44.8%). Common Pipistrelle was the next most recorded species (29.6%), with registrations approximately evenly spread between both monitoring stations. Leisler's Bat (15.3%), Daubenton's Bat (9.7%) and Natterer's Bat (8.7%) comprise the remaining majority of registrations and were mostly recorded at Bat_01. Brown Long-eared Bat and Whiskered Bat make up the final minority of registrations, accounting for 3.1% and 1% of registrations respectively.

Analysis of echolocation data did not provide any evidence of significant bat roosting proximal to the detector locations. In addition to echolocation calls, large numbers of 'feeding buzzes' were noted (indicating successful foraging) and social calls were encountered frequently throughout echolocation data analysis.

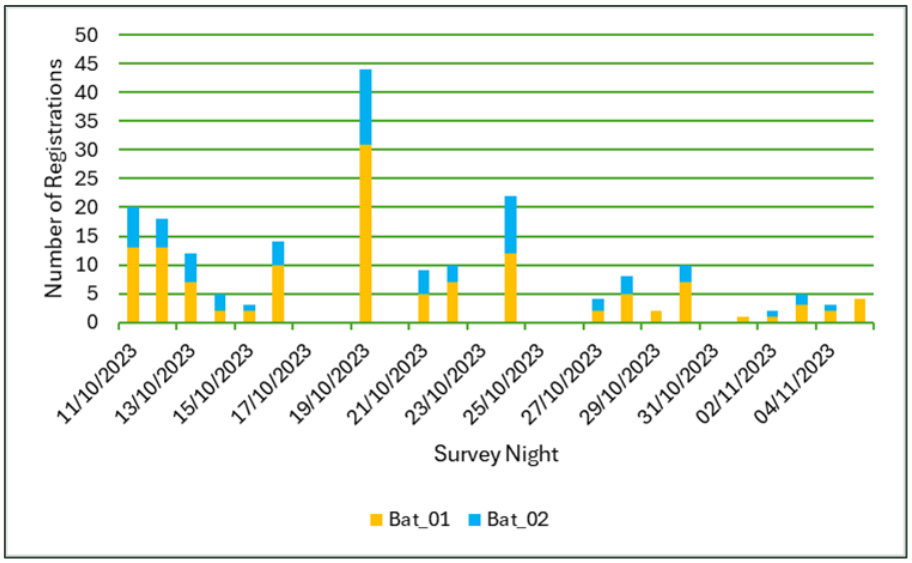


Figure 3.2 – Total number of registrations of all bat species per survey night across all two passive monitoring stations during the autumn 2023 survey season.

Summer 2024

A total of seven of the nine known resident Irish bat species were recorded during the summer 2024 survey season. The Annex II listed Lesser Horseshoe Bat was not recorded, and the proposed development is outside their current range despite the presence of suitable landscape. A total of 20,565 registrations were recorded across all four passive monitoring stations. The majority of these registrations were recorded at Bat_03 (46.9%), followed by Bat_06 (39.2%), Bat_04 (8.6%) with Bat_05 (5.4%) comprising the minority of registrations. Activity levels appear relatively inconsistent throughout the survey period (see **Figure 3.2**). It should be noted that Bat_04 only recorded for a period of three survey nights due a technical malfunction.

The results of passive bat monitoring are presented in **Table 3.4**. The majority of registrations comprised common and widespread species as would be expected in an Irish context such as Common Pipistrelle and Soprano Pipistrelle. Common Pipistrelle was the most commonly recorded species, accounting for 54% of all registrations. The majority of Common Pipistrelle registrations were recorded at Bat_03 (53.6%) followed by Bat_06 (31.9%). Soprano Pipistrelle was the next most recorded species (36.7%), with the majority of registrations occurring at Bat_06 (48.9%) followed by Bat_03 (40.6%). Leisler's Bat comprised the remaining majority of registrations (8.5%), and was largely evenly distributed between Bat_03, Bat_04 and Bat_06, with Bat_05 recording only a minority of registrations of this species. The remaining species of Brown Long-eared Bat, Daubenton's Bat, Natterer's Bat and Whiskered Bat all comprised less than 1% of the remaining registrations respectively and were largely recorded at Bat_03 and Bat_06.

When considering the average number of registrations per night across all species, bat activity was largely evenly distributed between Bat_03, Bat_04 and Bat_06, with Bat_05 consistently recording the lowest average number of registrations across all species.

The average sunset and sunrise times during the summer 2024 season were 21:48 and 05:28 respectively. Analysis of echolocation data did not provide any evidence of significant bat roosting proximal to the detector locations although a small proportion of registrations attributed to Leisler's Bat, Common Pipistrelle and Soprano Pipistrelle were recorded proximal to sunset.

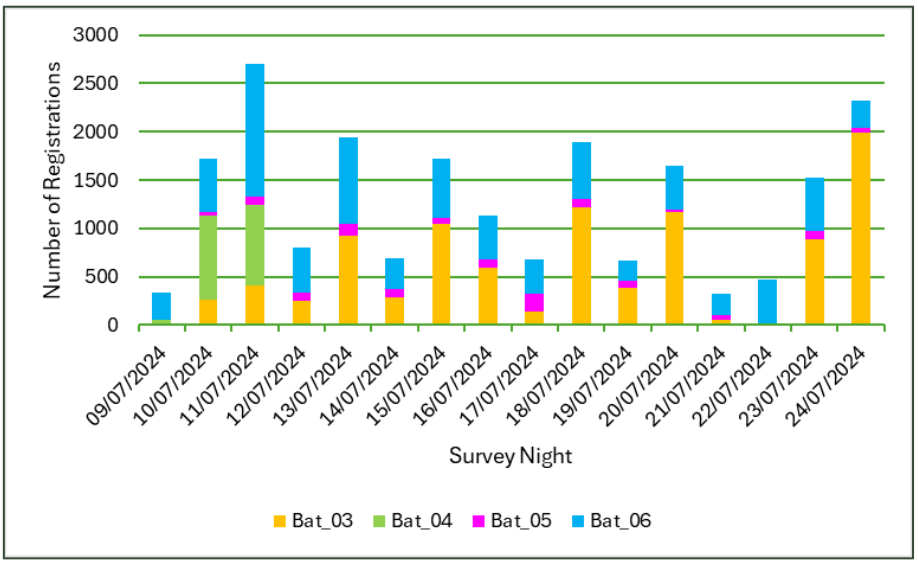


Figure 3.2 – Total number of registrations of all bat species per survey night across all four passive monitoring stations during the summer 2024 survey season.
Note: Bat_04 only recorded for three survey nights.

Considering the scale of the proposed site, the nature of the habitats contained within, the species recorded and distribution of those recordings during the survey indicate that the site is of high value for foraging and commuting bats.

Table 3.3. Autumn 2023 passive bat survey summary showing number of registrations* of each species.

Survey Night	Common Pipistrelle	Soprano Pipistrelle	Leisler's Bat	Brown Long-eared Bat	Natterer's Bat	Daubenton's Bat	Whiskered Bat
Bat_01							
11 October 2023	3	2	4	0	2	2	0
12 October 2023	4	4	4	0	0	1	0
13 October 2023	0	4	0	1	0	2	0
14 October 2023	0	1	0	0	0	1	0
15 October 2023	0	0	0	0	0	2	0
16 October 2023	0	4	1	0	1	4	0
17 October 2023	0	0	0	0	0	0	0
18 October 2023	0	0	0	0	0	0	0
19 October 2023	9	11	11	0	0	0	0
20 October 2023	0	0	0	0	0	0	0
21 October 2023	0	2	0	0	0	3	0
22 October 2023	2	2	0	0	2	1	0
23 October 2023	0	0	0	0	0	0	0
24 October 2023	2	4	2	0	3	1	0
25 October 2023	0	0	0	0	0	0	0
26 October 2023	0	0	0	0	0	0	0
27 October 2023	1	0	0	0	1	0	0
28 October 2023	3	2	0	0	0	0	0
29 October 2023	0	0	0	0	2	0	0
30 October 2023	1	2	1	0	3	0	0
01 November 2023	1	0	0	0	0	0	0
02 November 2023	1	0	0	0	0	0	0
03 November 2023	2	1	0	0	0	0	0
04 November 2023	1	0	0	0	1	0	0
05 November 2023	2	1	0	0	1	0	0

Bat_02							
11 October 2023	1	2	4	0	0	0	0
12 October 2023	3	2	0	0	0	0	0
13 October 2023	0	3	0	1	0	1	0
14 October 2023	0	1	1	1	0	0	0
15 October 2023	0	0	0	1	0	0	0
16 October 2023	1	1	0	0	0	1	1
17 October 2023	0	0	0	0	0	0	0
18 October 2023	0	0	0	0	0	0	0
19 October 2023	7	4	2	0	0	0	0
20 October 2023	0	0	0	0	0	0	0
21 October 2023	0	2	0	1	0	0	1
22 October 2023	2	1	0	0	0	0	0
23 October 2023	0	0	0	0	0	0	0
24 October 2023	3	6	0	1	0	0	0
25 October 2023	0	0	0	0	0	0	0
26 October 2023	0	0	0	0	0	0	0
27 October 2023	2	0	0	0	0	0	0
28 October 2023	3	0	0	0	0	0	0
29 October 2023	0	0	0	0	0	0	0
30 October 2023	2	0	0	0	1	0	0
01 November 2023	0	0	0	0	0	0	0
02 November 2023	0	1	0	0	0	0	0
03 November 2023	1	1	0	0	0	0	0
04 November 2023	1	0	0	0	0	0	0
05 November 2023	0	0	0	0	0	0	0

*Note: *Registration is defined as the presence of a bat species within a recording of up to 15 seconds.*

Table 3.4. Summer 2024 passive bat survey summary showing number of registrations* of each species.

Survey Night	Common Pipistrelle	Soprano Pipistrelle	Leisler's Bat	Brown Long-eared Bat	Natterer's Bat	Daubenton's Bat	Whiskered Bat
Bat_03							
10 July 2024	209	*43*	5	0	0	0	0
11 July 2024	316	*79*	19	0	0	0	0
12 July 2024	149	*81*	21	1	0	0	0
13 July 2024	471	*288*	168	1	0	1	1
14 July 2024	108	*101*	77	0	0	0	0
15 July 2024	720	*227*	98	1	1	1	0
16 July 2024	465	*116*	14	0	0	0	1
17 July 2024	29	*101*	6	1	0	0	0
18 July 2024	480	*691*	34	2	0	5	3
19 July 2024	237	*139*	14	0	0	0	0
20 July 2024	1014	*146*	3	0	0	2	0
21 July 2024	26	*27*	5	0	0	0	0
22 July 2024	1	*0*	8	0	0	0	0
23 July 2024	588	*195*	97	0	0	0	2
24 July 2024	1134	*832*	24	0	0	3	2
Bat_04							
09 July 2024	41	12	2	0	1	1	0
10 July 2024	525	319	5	2	22	0	0
11 July 2024	620	180	17	3	13	0	0
Bat_05							
10 July 2024	23	9	5	2	1	0	0
11 July 2024	36	20	31	0	0	0	0
12 July 2024	23	10	46	2	0	0	0
13 July 2024	22	30	60	4	0	0	0
14 July 2024	33	15	32	0	6	0	0
15 July 2024	17	14	26	0	0	0	0

16 July 2024	39	26	15	1	0	0	0
17 July 2024	105	34	52	0	0	0	0
18 July 2024	34	23	28	1	7	0	0
19 July 2024	32	21	15	0	1	0	0
20 July 2024	10	14	2	0	0	0	0
21 July 2024	16	12	13	1	1	0	0
22 July 2024	0	0	2	0	0	0	0
23 July 2024	32	29	29	0	1	0	0
24 July 2024	9	21	17	2	0	0	0
Bat_06							
09 July 2024	65	190	14	4	0	1	0
10 July 2024	158	374	14	1	0	1	0
11 July 2024	758	526	79	0	1	5	0
12 July 2024	198	227	44	0	0	2	0
13 July 2024	454	323	117	2	1	0	0
14 July 2024	142	112	56	2	1	1	0
15 July 2024	194	350	69	5	0	3	0
16 July 2024	154	255	43	2	1	2	0
17 July 2024	85	212	49	4	0	1	0
18 July 2024	248	247	83	1	0	1	0
19 July 2024	56	124	24	3	0	3	2
20 July 2024	258	163	34	2	0	2	0
21 July 2024	109	81	25	2	0	1	0
22 July 2024	256	176	19	1	0	4	0
23 July 2024	284	209	54	3	0	1	0
24 July 2024	118	127	28	2	0	2	0

*Note: *Registration is defined as the presence of a bat species within a recording of up to 15 seconds.*

3.2 OTTER

The desk study revealed two relevant internationally designated sites with Otter listed as a qualifying interest: Lough Ree SAC (0440) located 2.64km northeast and River Shannon Callows SAC (0216) located 1.55km east of the proposed development. Both sites are connected hydrologically via the River Cross and it is considered likely that individuals associated with these designated sites utilise the area surrounding the proposed development at least occasionally.

No evidence of Otter holts was identified along the watercourses surveyed as part of the proposed development. The primary watercourse, the River Cross was largely characterised by steep banks comprised of rank grassland and dense vegetation extending right up to the riverside (see **Plate 3.9**). Additionally, the River Cross appears to periodically inundate the surrounding area during periods of inclement weather. Considering the riverbank structure and periodic high-water levels resulting in inundation of the riverbanks, the portion of the River Cross surveyed as part of the proposed development is considered generally unsuitable for the formation of Otter holts.

Multiple mammal tracks were identified along the mammal underpass associated with the M6 bridge and a drainage channel associated with the River Cross, of which a portion were attributed to Otter (see **Plate 3.11**). Scat in the form of Otter spraint was identified in two locations: along the mammal underpass and along the River Cross, both of which are located outside the development boundary (see **Plate 3.10**). For locations of tracks and scat associated with Otter, see **Figure 3.1**.

Despite the lack of evidence of underground dwellings attributed to Otter, the River Cross is considered to provide suitable foraging and commuting habitat for Otter and the species is likely to regularly occur here.

Plate 3.9 – View of the River Cross with the M6 bridge within the background showing dense vegetation extending right up to the riverbank.

Plate 3.10 – Otter spraint on banks of the M6 mammal underpass.

Plate 3.11 – Otter tracks located on the banks of the M6 mammal underpass.

3.3 OTHER TAXA

Incidental sightings of other taxa outside the scope of this report were noted where relevant. Abundant frogspawn was identified within a drainage ditch associated with the River Cross (see **Figure 3.1** for location; **Plate 3.12**).

Plate 3.12 – Frog Spawn noted in drainage ditch proximal to works area in February 2024 (see **Figure 3.1**).

4 Potential Impacts

Potential ecological impacts which could arise as a result of the proposed development are discussed below. Avoidance and mitigation measures in respect of identified potential impacts are discussed in Chapter 5 - Avoidance and Mitigation Measures. The predicted residual impact of identified potential impacts following application of avoidance and mitigation measures are discussed in Chapter 6 - Residual Impacts.

4.1 BATS

The construction phase will likely result in the loss of vegetation including linear features such as treelines and hedgerows. Additionally, lone-standing trees may need to be removed to facilitate excavation works. An ecological assessment of those trees which will likely be removed as a result of the proposed development was carried out, and no evidence was recorded of the use of the trees by bats. Four trees (No. T_49, T_50, UT_01, UT_02) were identified to have 'PRF-I' suitability for roosting bats and therefore may periodically support individual or small numbers of bats (see **Figure 3.1** and **Table 3.2**). All remaining trees surveyed were considered to show no features suitable for potential roosting opportunities.

Vegetation removal and illumination of retained vegetation will impact foraging and commuting bats that use hedgerows and other similar features. Hedgerows and treelines maintain landscape connectivity and provide commuting bats with waypoints and corridors through which they commute to and from roosts/foraging areas. The loss of these linear hedgerow features on site will cause a reduction in landscape connectivity in the immediate vicinity of the proposed site.

Inappropriate or excessive illumination of hedgerow areas at night can cause disturbance to roosting, commuting and foraging bats. Artificial lighting is thought to increase the chances of bats being predated upon by avian predators (e.g. owls), and therefore bats may modify their behaviour to avoid illuminated areas. The oCEMP (AWN, 2024) outlines hours of work and site lighting during the construction phase of the development. No night works are proposed. No construction lighting is proposed, except in the winter months when deemed necessary for safety.

The use of heavy machinery in the root zone of trees can cause damage to nearby treeline features and lone-standing trees (see **Figure 3.1**), resulting in increased tree morbidity and mortality. Equally, the use of machinery in proximity to trees can result in accidental damage to the trunk and branches of trees. In the medium and long terms this could result in the death of trees which provide bat roosting opportunities.

Relative to the construction stage, no additional habitat loss will occur during the operational phase. Additionally, no lighting is proposed for the operational phase of the proposed development.

The overall effect on bats as a result of the construction phase of the proposed development in the absence of mitigation is considered to be a **temporary, slight, negative effect** at the local level (following EPA, 2022). The overall effect on bats in the operation phase is considered to be **neutral**.

4.2 OTTERS

No evidence of Otter holts or other protected mammal dwellings were present within or proximal to the development boundary. Evidence of Otter usage in the surrounding area was identified, with two areas of prints and two areas of scat identified. It is likely that Otter utilise the area within and surrounding the proposed development at least periodically, especially in relation to the River Cross. Any loss of trees, hedgerow and earthen bank habitat, alongside artificial lighting will cause a reduction in the suitability of the site and its surroundings for foraging and commuting Otter.

Construction works and site clearance likely will cause some local displacement of Otter as a result of noise. Deep excavations can potentially entrap Otter and other mammals commuting across the site. During construction, should there be pooled water in any excavations there is potential for drowning. Inappropriate or excessive lighting during the construction phase can cause disturbance to mammals at night. The inappropriate disposal of food wastes during the construction phase can encourage scavenging by mammals (and birds) at the site.

Localised increases in noise and dust levels are likely to occur during the construction phase. In the absence of mitigation, these impacts could give rise to indirect negative impacts on Otter and associated watercourses present in the local environment. Noise will occur through the operation of machinery (excavation, pile driving, etc.). Dust may arise during construction works if dry soil or other material is allowed to become windborne.

The overall effect on Otter as a result of the construction phase of the proposed development in the absence of mitigation is considered to be a **temporary, slight, negative effect** at the local level (following EPA, 2022). The overall effect on bats in the operation phase is considered to be **neutral**.

5 Mitigation Measures

5.1 BATS

The majority of trees surveyed on the proposed development site displayed 'negligible' roosting potential for bats, except four trees (No. T_49, T_50, UT_01, UT_02) displaying 'PRF-I' suitability for roosting bats and therefore may periodically support individual or small numbers of bats (see **Figure 3.1** and **Table 3.2**). These trees will be subject to survey by an Ecologist who is licensed to carry out bat disturbance and handling provided felling is required for these individuals. The survey will confirm that no bats are present prior to felling of the tree. Upon felling works, the tree will be lowered to the ground and allowed to remain for 24 hours prior to removal to facilitate any unidentified roosting bats to safely egress.

Based on current information, no derogation license is required to facilitate the works. In the event that a bat roost is discovered during pre-construction surveys such that they may be disturbed by the proposed works, a derogation license will be secured from NPWS prior to works.

Boundary habitats and trees which are to be retained will be fenced off prior to the commencement of works to protect these habitats from accidental ingress and damage to the root zone in order to preserve connectivity for commuting and foraging bats.

During construction, works will generally take place during daylight hours only. If some lighting is required for health, safety or security reasons, it shall be directed away from sensitive ecological features such as the River Cross and surrounding treelines and hedgerows. These measures are considered sufficient to minimise any adverse impacts on roosting, commuting and foraging bats in the construction phase.

5.2 OTTERS

Suitable fencing will be used to exclude mammals from any hazardous areas including deep excavations, or a means of escape will be provided. The temporary bridge that will be installed during construction will maintain passage along both sides of the river through the maintenance of minimum 0.6m x 1.0m space on the river side on both sides. Basic housekeeping measures will be implemented including the proper use and daily emptying of bins.

Standard surface water control measures as outlined in CIRIA (2001) and the oCEMP (AWN, 2024) are considered are considered sufficient to avoid any indirect impacts on foraging and commuting Otter as a result of surface water contamination. The proposed development sought to mitigate-by-design where possible any potential impacts on surface water. Trenchless drilling will be utilised when crossing watercourses such as the River Cross with appropriate setback distances.

During construction, works will generally take place during daylight hours only. If some lighting is required for health, safety or security reasons, it shall be directed away from sensitive ecological features such as the River Cross and its riparian habitat. These measures are considered sufficient to minimise any adverse impacts on roosting, commuting and foraging bats in the construction phase. These measures are considered sufficient to minimise any adverse impacts on commuting and foraging Otter in the construction phase.

Due to the scale of the proposed site and the nature of the habitats contained within, the site is of moderate value for its non-volant mammal assemblage. However, a pre-construction survey will be carried out to ensure that the baseline conditions are presented in the current report remain valid. Following CIEEM guidance[2], mammal surveys have a validity period of 12 to 18 months

5.3 OTHER TAXA

Any ponding water, including drainage ditches associated with the River Cross, such as the area identified in **Figure 3.1** will be inspected regularly by the Environmental Manager for the presence of frogspawn during the relevant season. If frog spawn is found to be present and likely to be disturbed by the proposed works, a licence from NPWS will be sought prior to moving to a suitable location locally.

[2] https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

6 Residual Impacts

Considering the application of the proposed mitigation measures the overall residual effect of the proposed development on bats and Otter will be **slight negative** during the construction phase and considered to be **neutral** thereafter.

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O'DONNELL ENVIRONMENTAL

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Appendix 2: Construction Environmental Management Plan, AWN, 2024

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OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

GAS TO GREENER IDEAS LIMITED POWER, MONKSLAND, ATHLONE, CO. ROSCOMMON

Report Prepared For

Gas Networks Ireland

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Our Reference

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1.0 INTRODUCTION

The outline Construction Environmental Management Plan (oCEMP) has been prepared by AWN Consulting Ltd. (AWN) on behalf of Gas Networks Ireland (GNI) in respect of the proposed Monksland Pipeline (Gas to Greener Ideas Athlone) project, located in County Roscommon. The Monksland Pipeline (GNI asset number 'GNI138') is designed to connect the existing BGE/77 750mm Ories to Perssepark 'Pipe to the West' Pipeline to the permitted Monksland Above Ground Installation (AGI).

The oCEMP provides a framework from which the construction stage CEMP will be developed by the appointed construction contractor(s) to avoid, minimise or mitigate any construction effects on the environment prior to commencement on site. This plan should be viewed as a live document that will be updated as and when required. The appointed construction contractor(s) will prepare specific method statements setting out site working requirements which manage perceived risks to the environment e.g., traffic management, work safety plans etc.

The oCEMP has been prepared to account for activities at the site during the demolition, excavation and construction phase of the project. The main issues that have been considered within this document are as follows;

- Description of the Project;
- Site Logistics;
- Environmental Consideration During Construction;
- Environmental Incidents Plan;
- Training Plan; and
- Review and finalisation of the CEMP

Additional mitigation measures may be added following consultation with relevant consultees in preparation of specific method statements prior to commencement of works.

2.0 DESCRIPTION OF THE PROJECT

The proposed Monksland Pipeline (herein after named the 'Proposed Development') consists of a 200mm (Nominal Bore) underground transmission pipeline c. 2.488 km in length, hot tap connection (named 'Monksland Hot Tap'), and underground pigging station (pipeline inspection, cleaning, maintenance) located at the Monksland Hot Tap.

The Proposed Development working area (Figure 2.1, 2.2), is located in County Roscommon, is approximately 12.3 hectares that traverses the townlands of Crannagh, Crannagh Beg, Crannagh Mor, Keeloges, Keelty and Monksland, County Roscommon (hereinafter referred to as "the site"). The area is predominantly characterised by agricultural lands. The largest urban centre in the vicinity is Athlone town c. 2.5 km east of the proposed pipeline.

Figure 2.1 *Pipeline Location Map 01 (site boundary indicated by redline) (Source: Fingleton White, Dwg Ref: 1379-01-DG-0001-Sht1)*

Figure 2.3 *Pipeline Location Map 02 (site boundary indicated by red line) (Source: Fingleton White, Dwg Ref: 1379-01-DG-0001)*

3.0 LEGISLATION AND GUIDANCE

All entities including parties, contractors, and consultants involved in this project must adhere to the legal regulations of Ireland as well as international and regional protocols and agreements Ireland is a part of. In cases of legislative updates, the most recent version will be followed, and all pertinent new legislation will be appropriately observed. This document presents the latest legislation as of its issuance date.

The appointed construction contractor(s) bears the responsibility of maintaining awareness of the most current iterations of legislation relevant to the project throughout the contract's duration. The Designer is expected to recognise key environmental risks and corresponding measures outlined in the oCEMP, with the final detailed design duly incorporating these considerations.

The appointed construction contractor(s) are obligated to understand and comply with the Environmental Considerations detailed in Section 5 of the oCEMP, any specific planning conditions linked to the Proposed Development, and additional pertinent documents as stipulated by the Employer and planning authority.

3.1 RELEVANT LEGISLATION

It is important to recognise that the appointed construction contractor(s) will need to have a clear understanding of their responsibilities according to legal requirements. These legal obligations encompass, but are not limited to:

- Planning and Development Act and subsequent amendments, 2000-2024
- Planning and Development Regulations 2001 to 2024.
- The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;
- The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015);
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015), 2019 (S.I. No. 77 of 2019);
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016);
- European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015);
- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended 2018 (S.I. No. 851 of 2018);
- Waste Management Acts of 1996 to 2021;
- The Water Pollution Acts of 1977 & 1998;
- The Wildlife Acts 1976 to 2022;
- Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended;
- Water Conservation Regulations 2008, S.I. No. 527 of 2008;
- European Communities (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended 2017 (S.I No. 464 of 2017);

- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);
- Litter Pollution Act of 1997, as amended, 2017 (Bill 58 of 2017); Litter Pollution Regulations 1999, S.I. No. 359 of 1999);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014), as amended 2019 (S.I. No. 233 of 2019);
- Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019);
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Environment (Miscellaneous Provisions) Act 2011, as amended 2015;
- Waste Management (Landfill Levy) Regulations 2008, as amended;
- Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management (Shipment of Waste) Regulations 2007, S.I. No. 419 of 2007;
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011, S.I. No 324 of 2011;
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96/2018);
- European Union Batteries and Accumulators Regulations 2014, S.I. No. 283 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I No. 286 of 2009, as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017), 2019 (S.I. No. 684 of 2019);
- European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended 2016 (S.I. No. 315 of 2016);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002;
- Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015);
- Protection of the Environment Act 2003;
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015, as amended, 2018 (S.I. No. 383 of 2018);
- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016); Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990);
- EC (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I No. 417 of 2013), 2016 (S.I. No. 2016/1628);

- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances.
- Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011);
- EU F Gas Regulations 2006, as amended, 2014, S.I. No. 517 of 2014, 2019 (S.I. No. 367 or 2019);
- Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994;
- Environmental Noise Regulations 2006, S.I. No. 140 of 2006;
- European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018;
- European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001, S.I No. 632 of 2001, as amended, 2006 (S.I No. 241 of 2006);
- European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996, S.I No. 359 of 1996 and 2001, S.I No. 632 of 2001);
- Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);
- Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, S.I. No. 112 of 1990 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000);
- European Communities Conservation of Wild Bird Regulations 1985, as amended;
- Noxious Weed Act, 1936, S.I. No. 38 of 1936;
- Noxious Weed Order, 1937, S.I. No. 103 of 1937;
- Flora (Protection) Order, 2015, S.I. No 356 of 2015;
- The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014, S.I. No. 31 of 2014;
- Forestry Regulations, S.I. No. 191 of 2017, as amended 2020 (S.I. No. 32 of 2020);
- The National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004);
- European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013 (S.I. No. 403 of 2013), 2015 (S.I. No. 301 of 2015), 2019 (S.I. No. 418 of 2019); and,
- European Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018, 2019 (S.I No. 191 of 2020).

3.2 RELEVANT INDUSTRY GUIDELINES

- BS 5837/2012. Trees in relation to design, demolition and construction;
- BS 3998; 2010. Tree Work. Recommendations;
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry.;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- Environmental Protection Agency (2021). 'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects';

- Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese knotweed;
- NRA (2005a). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
- NRA (2005b). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes;
- NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes;
- NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes; and,
- NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant
- Species on National Roads (Revision 1).
- Sustainability & Environmental Appraisal (March 2020) LA 120 Environmental management.

4.0 SITE OPERATION

The appointed contractor(s) are responsible for the correct set up and continued management of all site operations and environmental mitigations required under the S39A Consent for the construction phase of the project, including commissioning, demobilisation, and reinstatement.

4.1 SITE ESTABLISHMENT AND COMPOUND LOCATIONS

Initial establishment works involves setting up a protective barrier around the construction zones using fencing materials that are designed to restrict unauthorised access. Security fencing helps control who can enter the construction area and prevents theft, vandalism, and accidents. In areas adjacent to the public domain hoarding will typically be used in order to provide privacy by screening ongoing construction activities from public view.

The site construction compound located within the temporary working areas serves as the central hub for various activities and functions during the construction of a project. It is a temporary setup that provides essential welfare facilities and space for workers, equipment, materials, and administrative needs. The following elements will be required for the Proposed Development:

- **Security and Access Control:** The compound will have security measures in place to control access and ensure the safety of workers, equipment, and materials.
- **Offices and Meeting Rooms:** The compound will include office spaces for project managers, engineers, and administrative staff. Meeting rooms are providing for holding discussions, presentations, and planning sessions.
- **Welfare Facilities:** Welfare facilities are designed to provide comfort and basic amenities for workers. This will include restrooms, showers, drying rooms, changing rooms, and break areas.
- **Plant Storage and Machinery Storage:** Construction equipment and machinery are stored in designated areas within the compound.
- **Materials Storage:** Construction materials such as pipeline, sheetpiling, steel, cement, and other supplies are stored in organised areas within the compound.

Proper storage helps prevent damage to materials and ensures they are readily accessible when needed.

- **Parking:** Adequate parking spaces are provided for workers' vehicles, construction vehicles, and equipment that are not in use. The parking of construction vehicles on footpaths, grass verges and double-parking will be prohibited or limited to short durations outside of peak hours.
- **Designated Waste Storage Areas:** Segregated waste storage areas will be identified within the compound to properly store different types of construction waste, such as debris, packaging materials, and hazardous substances. If hazardous materials are present they will be contained to prevent leaks or spills.

All of the sub-contractors as well as the main contractor and project managers will occupy offices in the same area. Dedicated site parking for staff, contractors, and visitors will be located within the site compound. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives.

Temporary Works Area Location(s)

The Proposed Development will require the establishment of temporary works areas including three (3) construction compounds in order to facilitate the Proposed Development works. Locating the areas along the route ensures that construction activities can be efficiently managed and supervised, reducing the logistical challenges associated with a single centralised compound.

The proposed works areas are as follows:

- 1 no. temporary works area and compound at the proposed hot tap location,
- 1 no. temporary works area and compound located in the agricultural lands to the north of the Drum Community Centre, and
- 1 no. temporary works area and compound at the proposed tie-in with the Monksland AGI.

The Hot Tap works area and Pipeline works area have been identified and indicative space planning undertaken as illustrated below in Figure 4.1 (drawing ref: GNI-7710-005-01) and Figure 4.2 (drawing ref: GNI138-Misc-004-01).

There are 4 no. options for the AGI temporary works area locations identified for the. These potential locations are show in GNI-13803-008-01, GNI-13803-008-02, GNI-13803-008-03, or GNI-13803-008-04. The final AGI compound location will be established in collaboration with the appointed construction contractor(s) and the Greener Ideas Facility.

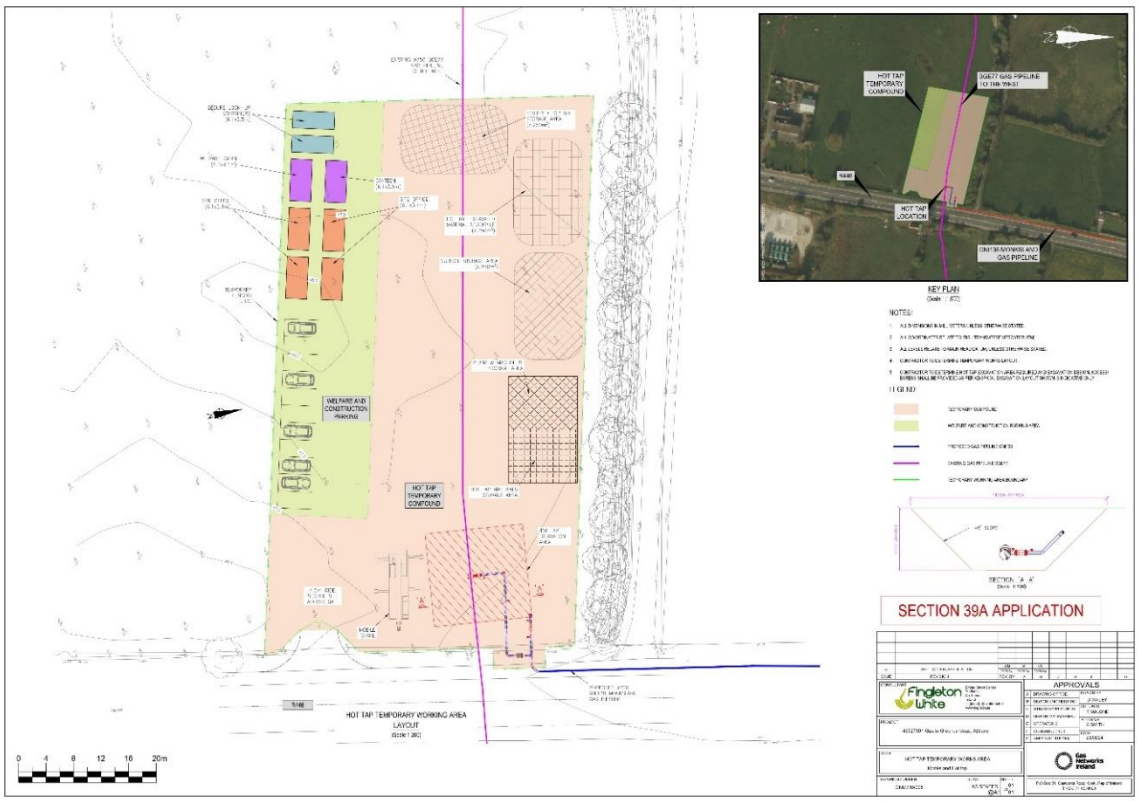

Figure 4.1 *Proposed Pipeline Temporary Works Area (Fingleton White Ref: GNI-7710-005-01)*

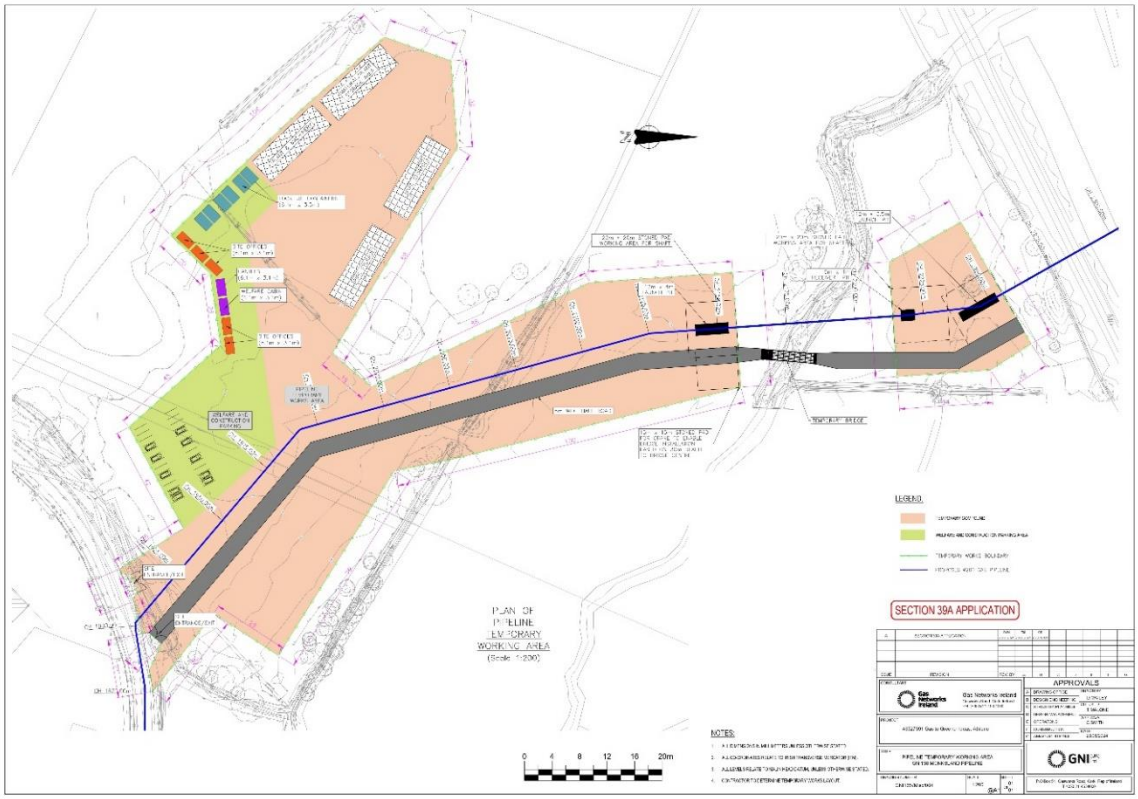

Figure 4.2 *Proposed Hot Tap Temporary Works Area (Fingleton White Ref: GNI-7710-005-01)*

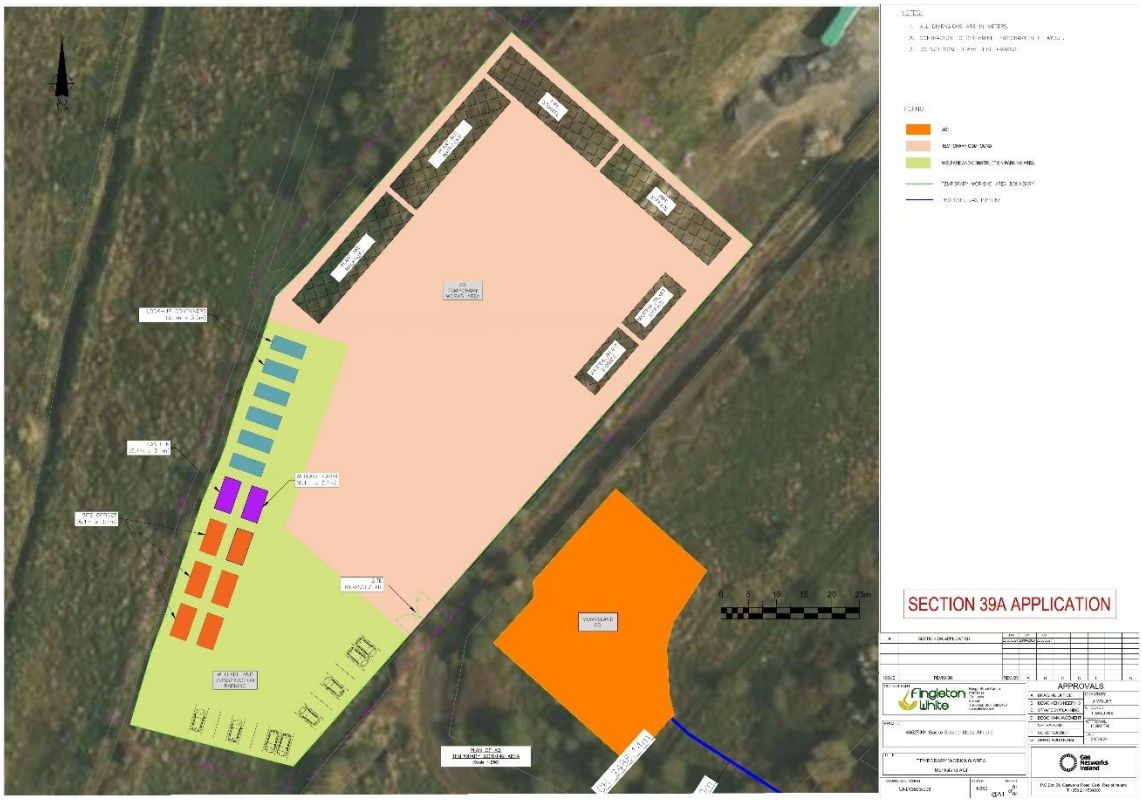

Figure 4.3 *Proposed AGI Temporary Works Area Layout (Fingleton White Ref: GNI-13803-008-01)*

Figure 4.4 *Proposed AGI Temporary Works Area Layout (Fingleton White Ref: GNI-13803-008-02)*

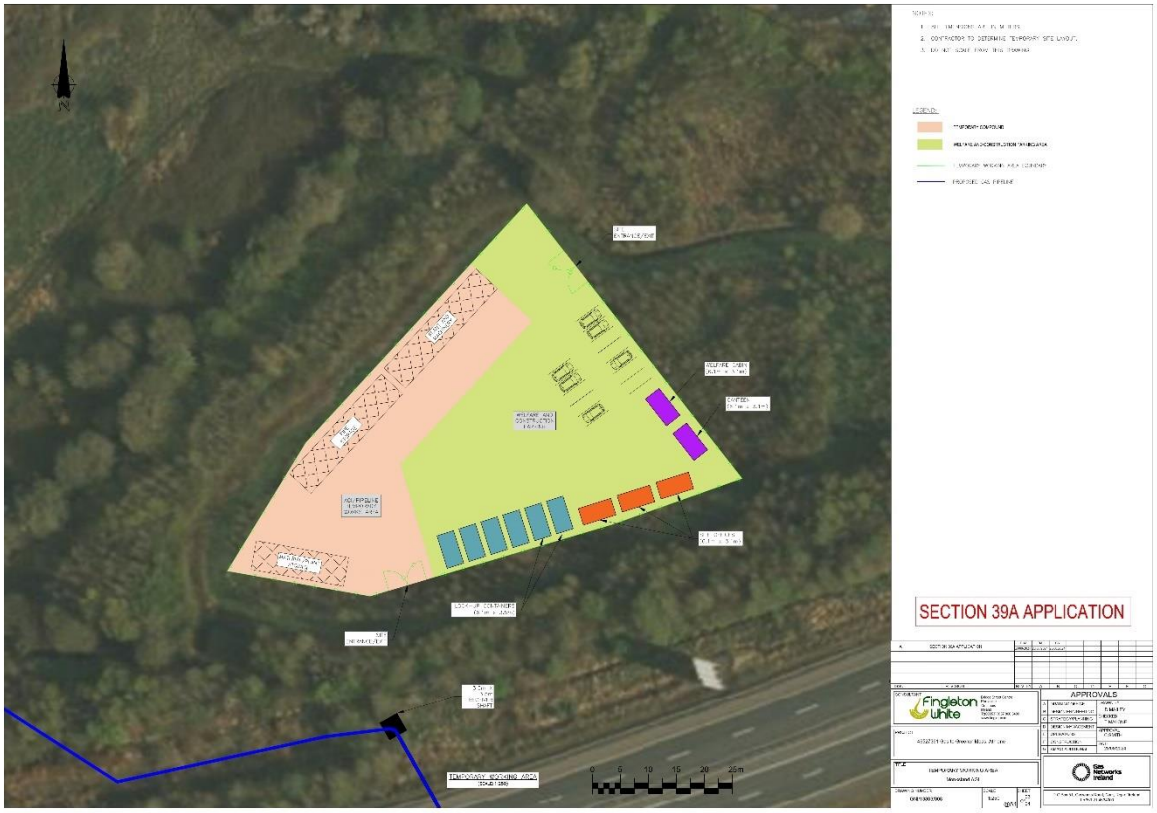

Figure 4.5 *Proposed AGI Temporary Works Area Layout (Fingleton White Ref: GNI-13803-008-03)*

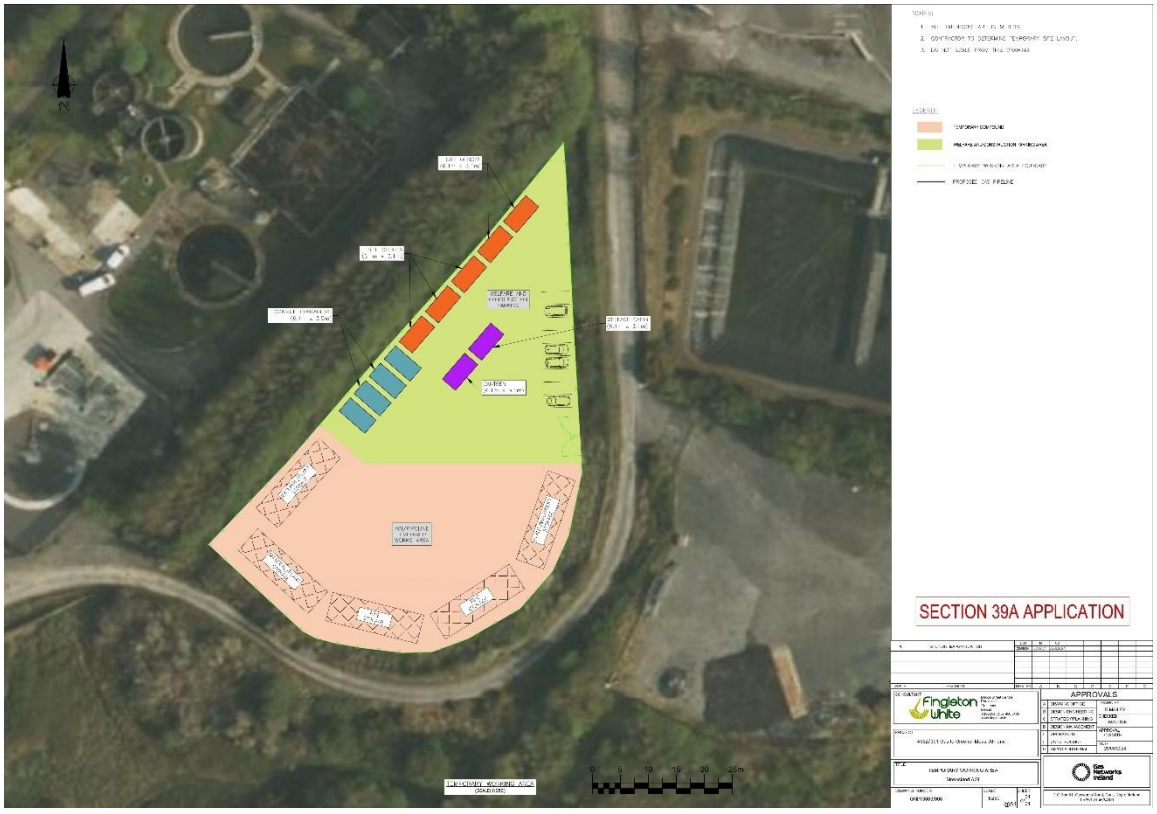

Figure 4.6 *Proposed AGI Temporary Works Area Layout (Fingleton White Ref: GNI-13803-008-04)*

4.2 CONSENTS, PERMITS, AND LICENSES

The appointed construction contractor(s) will secure all statutory consents and licences required to commence on-site construction activities in advance of works commencing, allowing for the appropriate notice period. The inclusion of these approval processes in the project timeline is to be overseen by the appointed construction contractor(s). These will include, but are not limited to:

- Site notices, and construction commencement notices.
- Licence to connect to existing utilities where required.
- Road Opening Licences under Section 13(6) of the Roads Act 1993 (as amended) – Consents to carry out roadworks which including the breaking open, boring or tunnelling under any public road to place, adjust, repair, alter or renew any apparatus.
- Construction Wastewater and Trade Effluent discharges (including foul water, construction water, or other water arising from the works) require:
    - discharge to sewer discharge licences issued by Uisce Éireann under Section 16 of the Local Government (Water Pollution) Acts and Regulations.
    - discharge to surface water (or storm sewer), or discharge to groundwater under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990.
- Water Supply Consents:
    - Consents for connection to water supply mains (mains water supply, local authority fire hydrants, other mains supply in private ownership); and
    - Consent for abstraction from groundwater / surface water (abstraction of > 25 m^3 of water or more per day, for any purpose must be registered with the EPA in accordance with European Union (Water Policy) (Abstractions Registration) Regulations 2018 (S.I. No. 261 of 2018).

The specific consents and licenses required can vary based on factors such as project size, location, potential environmental impacts, and the type of construction activities involved. The appointed construction contractor(s) will consult with local authorities and regulatory bodies prior to commencement of works.

4.3 CONSTRUCTION PROGRAMME AND PHASING

For the proposed road works, it is envisaged that each crew's working section length will be restricted to 100m in length to allow a stop-go system to be put in place using a single lane. It is anticipated that there could be 2 – 3 crews working on the pipeline routes at any one time, therefore 2 – 3 100m working sections along the entirety of the routes. A separation distance between these working sections will be maintained as agreed with the local authority (1 km for example) so that traffic disruption is minimised, and the areas do not cumulatively impact traffic.

Estimates for the duration of the construction works are included in the table below. The overall start-to-finish duration is estimated to be 9 months with development aspects overlapping. Construction is anticipated to commence in Q1 2025 and be completed by Q1 2026. Commissioning of the Proposed Development is estimated to take place over 1 – 2 months.

Table 2.2 *Estimated Construction Duration*

Works Area	Estimated Construction Duration (Months)

Pipeline / Hot Tap	8
AGI	9

4.4 SITE WORKING HOURS

It is expected that the construction of the AGI and pipeline will be completed during normal construction hours i.e. 7am to 7pm Monday to Friday, and 8am to 2 pm on Saturdays. However, it is possible that the appointed construction contractor(s) may wish to carry out certain operations outside these hours, e.g., Sunday or evening hours during long summer days. Such occurrences will be kept to a minimum and take place over a short timeframe and as such are unlikely to cause excessive disturbance.

4.5 EMPLOYMENT AND MANAGEMENT WORKFORCE

It is estimated that there will initially be 30-40 site personnel on site on a typical day, however during peak construction periods this is expected to fluctuate up to a maximum of 70 site personnel and contractors on site per day. Site personnel will include management, engineers, construction crews, supervisors, environment health and safety personal, and pipeline specialist contractors.

All employees working on the site will be required to have a SafePass Card (or similar approved Construction Health and Safety Card), manual handling training, Covid 19 training, and the necessary certificates to operate machinery, as required. The details of training required, records maintained, and induction procedures will be outlined in the appointed construction contractor(s) Health and Safety Plan(s).

4.6 SERVICES AND UTILITIES

Temporary site offices and welfare facilities for construction employees will need to be established. The offices and site amenities will need to have their own power supply (generator), water deliveries and foul water collection. The appointed construction contractor(s) will ensure that sufficient facilities are available at all times to accommodate the number of employees on site.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required.

During construction it is anticipated that a temporary supply will come from onsite Generator or via the MV network. All electrical works, including any connection to the ESB network will be carried out by a suitably qualified contractor.

Managing surface water and rainwater at a construction site compound is essential to prevent erosion, flooding, and environmental contamination. Proper management helps maintain a safe and organised working environment while minimising the impact on the surrounding environment.

Prior to commencing any construction activities, the appointed construction contractor(s) shall conduct a comprehensive utility locating survey using advanced technologies such as ground-penetrating radar (GPR) and electromagnetic induction methods. This survey will accurately identify the location and depth of all existing

underground services, including high voltage (HV) cables, water and gas pipelines, and telecommunication lines. Based on the results of the utility locating survey, exclusion zones will be demarcated around identified utilities. These zones will indicate areas where construction activities are restricted or subject to specific safety protocols.

4.7 MATERIAL HANDLING AND STORAGE

During the construction phase a significant amount of construction materials will be delivered to the site. A material storage area will be located within a secure section at the temporary works area(s).

Waste receptacles will be stored adjacent to the construction areas as required and will move in each of the sub-phases as the construction works progress. The segregated receptacles will be maintained close to each other in a designated Waste Storage Area (WSA) insofar as possible and will be clearly signed to identify the types of waste to be placed in each in accordance with the requirements of the Resource and Waste Management Plan. Segregated skips will be located in the material storage area, as required, and wheelie bins (or other suitable waste receptacles) for the offices and welfare facilities will be provided in strategic locations around the compound.

The majority of construction waste materials generated will be soil from excavation works. Suitable topsoil will be stockpiled pending reuse on appropriate sections of the site for backfilling and landscaping. Soil requiring removal offsite will be temporarily stockpiled away from watercourses and construction activities. Suitable locations will be determined as site clearance works and excavations progress taking into account the measures set out in Section 5 of the oCEMP. Material will be removed from site regularly to ensure only minimum stockpiling is required.

4.8 CONSTRUCTION ACCESS

Access during construction will be provided through the following known access/egress locations:

- A new roadside layby and bellmouth entrance shall be provided on the R446 at the hot tap tie in location between the edge of the road and the construction compound entrance.
- The existing agricultural entrance to the north of the Drum Community Centre on the L2027 will provide access to the agricultural lands.
- Access to the north of the Cross River will be provided by the proposed Temporary bridge over the Cross River.
- The Monksland AGI works area (to the north of the M6) will be accessed via industrial estate roads from the R362.

All Temporary Traffic Management will conform to the requirements of:

- Chapter 8 (Temporary Traffic Measures and Signs for Roadworks) of the Department of Transport Traffic Signs Manual (as amended)
- Department of Transport Temporary Traffic Management Design Guidance (August 2019)
- Department of Transport Temporary Traffic Management Operations Guidance (August 2019)
- The requirements of Roscommon County Council's Roads Department and TII (where applicable)

The contractor shall prepare detailed traffic management plans for the project. For works on private land, traffic management plans and signage shall also incorporate any requirements from the landowner.

The Temporary Traffic Management (TTM) measures (Section 5.8 of this CEMP) will ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the proposed works. Furthermore, it is in the interests of the construction programme that deliveries, particularly concrete deliveries are not unduly hampered by traffic congestion, and as a result continuous review of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

4.9 VISITOR MANAGEMENT

Visitors will only be allowed to enter the site in vehicles via the main haul road or via designated pedestrian access gates. A dedicated, secured footpath to the main site offices will be established for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the site unless being accompanied by an inducted member of the site team.

5.0 ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS

5.1 LAND, SOIL, GEOLOGY, WATER (HYDROGEOLOGY AND HYDROLOGY)

Measures for the Control of Suspended Solids

The appointed contractor(s) will develop a works specific Sediment Control Plan (SCP), which will form part of the CEMP (the principles of which are detailed here), in advance of any construction activities commencing. The reduction and prevention of suspended solid pollution will be required during all elements of construction.

The following mitigation measures will be implemented as part of the SCP during the construction phase in order to manage the potential impact associated with excavation, stockpiled materials, and reducing sediment runoff at source.

- Prior to commencement of construction the appointed contractor(s) will prepare and adhere to a method statement identifying the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.
- The appointed contractor(s) will identify pathways of preferential flow within the project area and implement suitable mitigation measures to ensure contaminated water from the sites is treated before being released into any watercourse. Pathways of preferential flow are influenced by the site's topography and are subject to change as works are undertaken. Consequently, the appointed contractor(s) will need to determine these pathways on site and agreed with the Ecological Clerk of Works (EcoW), see measures for Ecology, Section 5.2. below.
- Clean water will be kept separate from contaminated water to reduce the volume to be treated.
- To prevent rainwater from inundating the construction area through the open pipeline trenches, running track, cut-off drains / interceptor ditches will be

installed to intercept uncontaminated surface water and prevent it from entering the work zone.

- Run-off velocities and erosive energy will be reduced by extending the lengths of flow paths for rainwater run-off, building interceptor ditches and channels, and lining steep, unavoidable interceptors or conveyance channels with low-gradient designs to minimise secondary erosion. Additionally, ditches will be lined with filter fabric, rock, or polyethylene to prevent channel erosion.
- Designated areas for stockpiling excavated material will be identified >50 m away from any watercourse. Silt fences will be installed around stockpiles to limit movement of entrained sediment in surface water runoff. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Hard surface site roads and public roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.
- A stabilised entranceway consisting of an aggregate on a geotech mesh/fabric base that will be located at any entry or exit point of the construction site. Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- Depending on the soil conditions, haul roads will be stabilised utilising materials such as crushed rock, gravel and a layer of geotextiles to improve load-bearing capacity and prevent deformation under heavy traffic. Sediment produced, as a result of the construction processes, will be contained from entering the nearby watercourse using a combination of settlement ponds and silt fences. Regular maintenance, including grading, resurfacing, and drainage management, is required to keep the haul road in good condition during the works.
- Silt fencing will be installed along the working area adjacent to the watercourse, during the construction phase, to ensure no silt entry to the adjacent surface waters. Silt fences will be a permeable woven geotextile fabric (Hy-Tex Terrastop Premium silt fence, or similar) and not a mesh. The silt fences will be positioned to allow an appropriate working area. The silt fencing will be installed as per manufacturer's guidelines.
- Monitoring of the effectiveness of the silt fences will be undertaken (c.f. Section 5.2. below) and maintenance of the fence will be undertaken if it comes into disrepair or significant amounts of silt begin to build up. Once the construction phase is complete, all fencing will be removed and disposed of to a licensed waste facility.
- Excavation works will not be carried out during or following heavy rainfall (i.e. if there is a yellow weather warning in place or 5mm in a 1-hour period).
- No unnecessary tracking or excavating in grassland/vegetated areas will occur (to prevent sediment laden run-off).
- Excavations will remain open for as little time as possible before placement of fill and be revegetated and remediation as soon as practicable.
- Reinstatement and revegetation will be carried out as soon as practicable after pipeline installation and commissioning is completed.
- Additional remediation works and recontouring activities may be necessary following the completion of the primary works, especially after periods of heavy rainfall. These post-completion measures aim to ensure the stability and success of revegetation. Remediation may involve addressing any erosion or sediment displacement that has occurred due to the rainfall.

- Regular inspection of surface water run-off and sediment control measures will be carried out during the construction phase. A log the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

Measures for the Control and Treatment of Construction Surface Water

No water that has gathered on-site from any source (groundwater, surface water, hydrostatic testing water, or precipitation) will be pumped directly to surface water. All water intercepted on-site will be managed as and controlled for the duration of the construction works to prevent flow of silt-laden surface water flowing into watercourses.

The discharges of groundwater, surface water, hydrostatic testing water, or precipitation ('construction water') from the construction site will be managed and controlled for the duration of the construction works. Construction water that contains a high sediment load and potential for other pollutants will require removal. All discharges to surface waters will be suitably treated prior to discharge. There will be no direct discharge of untreated, silty, or contaminated water from any element of the works without appropriate attenuation, settlement and silt trapping.

Construction water will originate from the dewatering boreholes that will be installed near the Cross River to assist with creating a dry working environment in the pipeline trench and the launch and receiver shafts which facilitate the trenchless crossing. Dewatering from the established boreholes will be managed as required to assist with creating a dry working environment and prevent water from seeping into the excavations (pipeline trench, launch/receiver shaft) and flooding the construction site.

During commissioning there will be discharge of water generated from hydrostatic pressure tests. This water will be managed as required with temporary diversion / pumping to Intermediate Bulk Containers (IBCs) for removal offsite, however this may require on site discharge. This is clean water that has been pumped through the new pipeline under pressure to verify pipeline integrity under I.S. 328.

Construction water will also come from localised pumping of surface water run-off, rainfall, and groundwater ingress in the pipeline trench and launch/receiver shafts during and after heavy rainfall events.

The control and treatment measures for construction water to be implemented include:

- During construction, surface waters drainage, including any excavation dewatering, will be treated to allow settlement prior to discharge.
- A staged treatment system (treatment-train) will be in place during construction works that will ensure the quality of the discharge water is maintained and will comprise hydrocarbon interception for removal of petrol/diesel, settlement tanks for silt removal, and pH balancing (as required). Final treatment will be via appropriately sized silt bags or silt socks, allowing water to settle out or filter before discharge. Used silt bags will be disposed of in an environmentally appropriate manner.
- The level of suspended solids in any discharges to fisheries waters (the Cross river and its tributaries) as a consequence of construction works shall not exceed 25 mg/l of suspended solids, nor result in the deposition of silts on gravels or any element of aquatic flora and fauna (as per IFI (2016) Guidelines).
- Regular inspection of the staged treatment system and discharge quality will be carried out during the construction phase. A of log the regular inspections

will be maintained, and any exceedance of 25 mg/l of suspended solids will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

- Whenever possible, water pumped out from excavations will be discharged onto permeable vegetated areas after undergoing sediment removal through filtration.
- When discharging clean water into watercourses, measures like baffles, geotextiles, sediment mat, or riprap will be set up at the discharge point to avoid disturbing the watercourse. The design of the outfalls and the construction method statements for their installation shall be agreed with IFI prior to construction.
- Discharge to surface water (or storm sewer), or discharge to groundwater under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990.

Should any discharge of contaminated construction water be required during the construction phase the discharge will be removed from site via road tanker or similar.

Measures for the Reuse of Soils, and Sourcing of Aggregates

Where excavated soil is intended for reuse on site, topsoil will be stockpiled separately to the subsoil at designated locations. Stockpiled topsoil and subsoil will be kept free from disturbance for the duration of construction to reduce risk of physical damage and compaction pending reuse across the site for backfilling and landscaping.

All excavated materials will be visually inspected by suitably qualified persons assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. Suitable soils and stones will be retained, and reused on-site as backfill where possible.

If any waste soil requires removal from site, it will be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classified for transportation and recovery/disposal offsite.

Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (Previously Article 27 of the European Communities (Waste Directive)), allows material from one site to be reused on another site. By-product notifications are made to the EPA via their online notification form. This process requires certain conditions to be met and excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material. Regulation 27 will also be investigated to see if material can be imported onto the site for beneficial reuse instead of using virgin materials.

Regulation 28 (End-of-waste status) as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (Previously Article 28 of the European Communities (Waste Directive)), allows certain specified waste to cease to be waste when it has undergone a recovery, including recycling, operation and complies with specific criteria. Regulation 28 will be considered for waste streams, where the regulation may be utilised.

Imported CL.503 material will be required to provide a suitable bedding layer that will be placed in accordance with IS 328:2021, GNI/AO/SP/007, Guidelines for Managing Openings in Public Roads 2017 (The Purple Book) and compacted in the trench before laying the pipeline. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development,
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company

All imported fill and aggregate that may be required for the Proposed Development will be sourced from reputable suppliers.

A site-specific Resource and Waste Management Plan (RWMP) will be prepared by the construction contractor prior to any excavations or construction works taking place on site.

Measures for the Control of Pollution from Other Substances

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge of pollutants to soil, surface water or groundwater systems:

- All plant and machinery will be regularly maintained and serviced to minimise the risk of release of hydrocarbons. This will only be undertaken by qualified personnel;
- Designation of bunded maintenance and refuelling areas on the Site;
- Provision of spill kit facilities across the Site, strategically located in high risk areas;
- Where mobile fuel bowsers are used, the following measures will be undertaken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training;
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;

- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from surface water drains – a minimum 50 m buffer zone will be adhered to. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

Measures for the Use of Concrete

Any ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash water from cleaning ready-mix concrete wagons and mixers will be contaminated. Wagons and mixers will be washed off-site in a designated washout area. Washout to be removed off site and disposed of appropriately at a licenced facility or reused for concrete creation.

Mitigation in the form of avoiding the use of traditional concrete has been incorporated into the design with precast structures, including temporary bridge , precast marker slabs and concrete jacking pipes, being utilised.

Measures for the Management of Construction Compounds and Materials Storage

The Site Selection for Construction Compounds will be undertaken in accordance with Section 4.1 of the oCEMP.

- All materials will be stored in compounds and will be stored in a manner that is safe and in line with best industry practice. Fuels and chemicals will be stored in an appropriately bunded area/with double skinned tanks.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent cross-contamination.
- Any watercourses and vegetation (trees/hedgerows) to be retained that occur in areas of land that will be used for site compound / storage facilities will be fenced off in advance of establishment works.
- All surface water runoff will be intercepted and directed to the appropriate on-site treatment system for the removal of pollutants prior to discharge. Clean water from compound roofs etc will be kept separate from contaminated water to reduce the volume to be treated.
- Construction materials, including aggregates etc. will be stored a minimum of 40 m distance from the Cross River and 20 m distance from any other surface water body, to prevent any blockage to flood water flow paths from occurring during high rainfall events.
- Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The appointed contractor(s) will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Welfare facilities will be situated at a minimum distance of

40 m distance from the Cross River and 20 m distance from any other surface water body. Foul water from the offices and welfare facilities on the site will be contained within the portable toilets and collected by a licensed waste sewerage contractor.

Measures for the Watercourse Crossings (instream works)

In combination with the measures outlined above, the specific measures below will be implemented at the proposed 2 no. trenched watercourse crossings works (tributary to the Cross River Chainage 2065 to 2075, and Chainage 2420 to 2430):

- Prior to the commencement of works a comprehensive photographic record of the existing condition of the watercourse before any construction activities commence will be undertaken. This documentation will serve as a reference point for reinstalment activities after the completion of works.
- The works area for the flume crossings will be isolated from surface water using sandbags or suitable containment methods to create a seal that span the full width of the watercourse. Heavy gauge plastic may be required in order to ensure a watertight seal is obtained. This keeps a stretch of the river dry and the water is transferred downstream of the works area through gravity fed flumes.
- Sufficiently large flume pipes will be sized to ensure they are capable of accommodation flood flow water volumes are inserted into the watercourse, ensuring they extend past the area of the proposed trench and running track.
- Measures like geotextiles, sediment mat, or riprap will be set up at the downstream of the flume to avoid disturbing the watercourse bed.
- Water pumped out from the isolated stream bed will be and treated before disgrace into the downstream watercourse.
- Following the dewatering process but prior to initiating the construction activities, the exposed bed material will be systematically extracted from sections that will undergo disruption, especially in areas where machinery will be operating.
- Excavated stream bed material will be stockpiled separately from all other material, in a designated area at least 15m from any watercourse.
- De-watering from the isolated stream bed and from within the trench during pipeline works may be required. Water within the contained area contaminated with suspended solids or other potential pollutants shall not be released directly to surface water. It will be pumped to a suitable treatment system before discharge into the downstream watercourse.
- No vehicles or machinery will cross the streambed.
- Once crossing works are complete, the previously excavated stream bed material will be used to reinstate the stream bed to its original level.
- Should riverbed material excavated be deemed unfit for reinstatement of the riverbed, stone of the same size and geology shall be sourced for reinstatement purposes.
- Prior to reinstatement and removal of the flume the work area will be re-watered to avoid sudden ingress of water causing erosion of the replaced bed or bank material.
- Works to stream banks and instream works to be conducted during times of settled weather and low water flows. Working during times of heavy rainfall will be avoided.
- Watercourse banks will be reformed to their original profile. Geocoir will be laid and secured to the newly profiled bank to avoid any risk of erosion or run-off during high intensity rainfall events. A fast growing, deep rooting grass seed

mix will be spread along these banks, as well as native plants and fencing, as appropriate, and agreed with the landowner.
- Once the dams and flume are removed, the watercourse will be allowed to flow normally for the remainder of construction.
- Upon completion of all construction works, all silt fencing will be removed and disposed of to a licensed waste facility.

Regular review of the works area will be undertaken to ensuring effective mitigation of impacts associated with the temporary damming/fluming works by an Environmental Officer or the ECoW. Best practice guidance will be followed for the proposed works including Inland Fisheries Ireland 'Guidelines on protection of fisheries during construction works in and adjacent to waters' (IFI, 2016) and Transport Infrastructure Ireland's 'Guidelines for the crossing of watercourses during the construction of national road schemes' (TII, 2008).

5.2 ECOLOGY AND BIODIVERSITY

Appointment of Ecological Clerk of Works

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed at the outset of the construction works to ensure that all environmental and ecological commitments are adhered to throughout the project. The ECoW will be specifically responsible for overseeing the correct implementation of all protective measures for European sites as detailed in the project Natura Impact Statement (NIS). The ECoW will provide guidance on the required mitigations to the Project Team, and in particular the Site Manager. The Site Manager shall ensure that all personnel working on-site are trained and aware of the mitigation measures detailed below. While the Ecological Clerk of Works (ECoW) oversees ecological and environmental compliance, they are not solely responsible. All project staff, including the appointed contractor(s) environmental personnel, share the responsibility for ensuring that environmental best practices are adhered to. The appointed contractor(s) staff must work together to maintain high environmental standards and mitigate impacts, thereby ensuring the success of the project's environmental commitments.

The ECoW will monitor works practices with targeted efforts and attendance at site at project start up to ensure mitigation measures and best practice measures are in place. The ECoW will also be present onsite to monitor excavation and dewatering operations during the project construction phase. The frequency of the ECoW's attendance on site will be dictated by the nature of the works. It is recommended that a weekly site visit be completed during the construction visit, but this may need to be more frequent during specific works practices such as deep excavations or dewatering. The ECoW will be fully appraised of all of the mitigation measures included in the project EcIA and NIS, the accompanying S39A Application and the reasons why they are to be applied.

The appointed ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM), or equivalent, and will have at least 5 years consultancy experience, with commensurate experience in the role of ECoW for work on similar construction projects. The appointed Ecologist or environmental scientist will have the authority to stop works or temporarily halt or delay ongoing works where further consideration or on-site improvements of mitigation may be necessary.

Removal of Vegetation, Trees, and Reinstatement Post Construction

The construction work areas will be clearly delineated prior to the commencement of any works taking place on site. No vegetation clearance will occur outside the designated areas within the proposed development site. The retention of existing green corridors such as hedgerows and promotion of biodiversity through native species landscaping will be undertaken where feasible.

The following measures will be implemented:

- All trees that are to be retained, both within and adjacent to the Proposed Development boundary (where the Root Protection Area (RPA). of the tree extends into the Proposed Development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees;
- Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist;
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it;
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10m of any retained trees, hedgerows and treelines;
- The construction contractor will seek to avoid removing any hedges or trees during the nesting season and where this is not possible, an ecologist will be engaged to ensure compliance with the Wildlife Act 1976, as amended. The Applicant (GNI) employ their own internal policies on Tree Cutting and Hedge Trimming that applies the applicant Biodiversity Mitigation Hierarchy on all projects to avoid and minimise any tree/hedgerow loss and to add biodiversity net gain, where practicable. The Applicant will engage with the Local Authority to identify and agree suitable biodiversity measures and/or lands to achieve biodiversity net gain before completion of the project.

All areas of hedgerow vegetation removed will be fully reinstated with an appropriate native planting mix of local provenance including the following species:

- Elder *Sambucus nigra*
- Hawthorn *Crataegus monogyna*
- Rowan *Sorbus aucuparia*
- Birch *Betula Spp*. (wetter areas)
- Guelder Rose *Viburnum opulus*

Measures for the protection of the Cross River and Tributaries

These mitigation measures apply to works within proximity to the Cross River and its tributaries in respect of surface water quality and the protection of downstream European sites.

- Prior to works commencing construction contractor(s) temporary works design and Method Statements in relation to the Cross River temporary bridge crossing and crossing under the Cross River will be agreed in prior to the

commencement of these works with the project ECoW and Inland Fisheries Ireland (IFI) and provided to National Parks and Wildlife Services (NPWS).

- IFI will be notified a minimum of 5 working days prior to work commencing in relation to the Cross River temporary bridge crossing and crossing under the Cross River.
    - The following IFI representatives are to be notified: Catherine Kerins <catherine.kerins@fisheriesireland.ie> and Arnold Donnelly <arnold.donnelly@fisheriesireland.ie>
- The Method Statements will contain relevant environmental mitigation and control measures and Emergency Response Plan having regard to relevant pollution prevention guidelines in particular the IFI document “Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters”.
- An appraisal report will be sent to IFI in relation to geotechnical and ground conditions to determine that the crossing is likely to be completed safely without risk to the aquatic environment.
- The abutments for the temporary crossing will be a minimum setback of 2 m from the top of the riverbank.
- The temporary bridge crossing will be constructed in such a way that it drains away from the Cross River and that any runoff is taken away from the River banks on either side.
- Work buffer zones of a minimum of 10 metres will be adhered to along the Cross River (with the exception of the temporary bridge crossing).
- The project silt fences will be installed under the ECoW supervision and will be maintained until all ground disturbance is ceased. Once installed, the silt fence will be inspected regularly during construction and more frequently during heavy rainfall events. The ECoW will also supervise the removal of the silt fences following the completion of the works.
- The works within the immediate vicinity of the cross river, including the trenchless crossing and temporary bridge (Chainage 2100 to 2235) will be confined to May 1st to September 30th inclusive unless otherwise agreed with Inland Fisheries Ireland.
- Launch and receptor shafts for the trenchless crossing will be located a minimum of 20m from the riverbanks of the Cross River.
- Monitoring will be undertaken whilst each watercourse crossing and directional drilling is being completed. This monitoring will be agreed with IFI in advance of works.

In addition to the measures outline above, the mitigation measures outlined in Section 5.1 of the oCEMP for the protection of surface water quality and the aquatic environment will be implemented in full during construction.

Measures for Bats

Four trees (No. T_49, T_50, UT_01, UT_02) displaying ‘PRF-I’ suitability for roosting bats will be subject to survey by an Ecologist who is licensed to carry out bat disturbance and handling provided felling is required for these individuals. The survey will confirm that no bats are present prior to felling of the tree. Upon felling works, the tree will be lowered to the ground and allowed to remain for 24 hours prior to removal to facilitate any unidentified roosting bats to safely egress. If bats are found a derogation license will be secured from NPWS prior to works.

Boundary habitats and trees which are to be retained will be fenced off prior to the commencement of works to protect these habitats from accidental ingress and damage to the root zone in order to preserve connectivity for commuting and foraging bats.

Lighting required for health, safety or security reasons, shall be directed away from sensitive ecological features such as the River Cross and surrounding treelines and hedgerows.

Measures for Otters

Suitable fencing will be used to exclude mammals from any hazardous areas including deep excavations, or a means of escape will be provided.

The temporary bridge that will be installed during construction will maintain passage along both sides of the river through the maintenance of minimum 0.6m x 1.0m space on the river side of the temporary abutments.

Standard surface water control measures as outlined in CIRIA (2001), and Section 5.1 of the oCEMP are considered are considered sufficient to avoid any indirect impacts on foraging and commuting Otter as a result of surface water contamination.

Lighting required for health, safety or security reasons, shall be directed away from sensitive ecological features such as the River Cross and surrounding treelines and hedgerows.

Pre-construction survey will be carried out to ensure that the baseline conditions are presented in the current report remain valid. Following CIEEM guidance, mammal surveys have a validity period of 12 to 18 months.

Biosecurity and Invasive Species Management

There will be no spread of invasive species as a result of the proposed development. Biosecurity of both plant and animal species will be employed pre and post works and will form part of the Appointed Contractor's CEMP.

A large infestation of Japanese knotweed (Reynoutria japonica) was recorded growing on the property of the cottage located on the R446 (ITM 600804 739020; Chainage 450) adjacent to the proposed pipe laying works.

Biosecurity protocols in relation to aquatic environment will be implemented by the construction contractor(s) in line with the IFI field work protocol for field survey work (2010). An Invasive Alien Species (IAS) Survey and IAS Management Plan (INVAS, 2024) has been developed that will; be adhered to during construction, in summary this includes the below measures.

Planning and Preparation:

- Conduct a toolbox talk for all staff on Japanese knotweed risks and responsibilities.
- Clearly demarcate the infested zone and establish a biosecurity station.
- Restrict access to authorised personnel until excavation is completed and signed off.

Excavation of Pipeline Trench:

- Excavate trench to a depth of 1,800 mm, extending 7 metres on either side of the infestation (total length 20 metres).
- Install a proprietary root barrier membrane (Hy-tex C3) at a depth of 1,800 mm along the base and sides of the trench.

- Place the membrane between two sheets of plywood on the walls and between two layers of 100mm sand at the base.
- Wrap the proposed pipeline in the membrane for extra protection.

Excavated Soil Management:

- Remove contaminated soil to a licensed landfill (IMS, Naul, Co. Dublin) under a Reg 49 licence from NPWS.
- Submit necessary documents: WAC certificate (with 2kg soil sample), waste acceptance document from IMS, haulier's permit, and management plan.
- Ensure bio-secure loading of soil into trucks; clean trucks and equipment before leaving the site.

Cleaning and Decontamination:

- Set up a cleaning area with sand and teram layers for truck and equipment decontamination.
- Contain runoff from cleaning and load into the last truck for removal.
- Wash Stations will be established at the exit point and all personnel must disinfect their PPE and equipment used on site at these stations.
- All machinery that will be used on the site must be thoroughly cleaned before entering the site (to avoid contaminating the site with invasive species from elsewhere) and cleaned before leaving the works area.

Documentation and Record Keeping:

- Maintain detailed records of all operations, including excavation area, depth, volume of material removed, personnel and equipment inventory, and any issues encountered.

5.3 AIR QUALITY

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following measures have been proposed by drawing on best practice guidance from Ireland, and the UK Institute of Air Quality Management publication '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024)

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be

implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Bonfires and burning of waste materials is prohibited.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

5.4 CLIMATE

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Waste materials will be re-used on site where possible and where re-use is not possible on-site they will be sent off-site for recycling, re-use or recovery.
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

5.5 NOISE AND VIBRATION

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228-1. Whist construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site noise sensitive locations are minimised. The best practice measures set out in BS 5228-1 and BS 5228-2 include guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening;
- Hours of work;
- Liaison with the public, and;
- Monitoring.

The TII Noise Guidelines 2004 (NRA 2004) and TII Noise Guidelines 2014 (NRA 2014) specify noise levels that are deemed acceptable in terms of construction noise for national road projects and are commonly applied for other linear projects in Ireland. These limits have been derived for the construction of new national road projects which predominately pass through rural environments with quieter ambient noise levels compared to those in urban settings. These limits are set out in Table 4.1

The contractor will put in place the most appropriate vibration control measures depending on the level of vibration reduction required at individual working areas i.e. based on the construction threshold values for vibration set out in Table 4.2.

Table 5.1 *Proposed Construction Noise Levels (CNLs) at the Facade of Dwellings during the Construction Phase*

Days and Times	Noise Levels (dB re 2 x 10^{-5} Pa)	
	$L_{Aeq,1hr}$	L_{ASmax}
Monday to Friday 07:00hrs to 19:00hrs	70	80
Monday to Friday 19:00hrs to 22:00hrs	60*	65*
Saturdays 08:00hrs to 16:30hrs	65	75

Days and Times	Noise Levels (dB re 2 x 10^{-5} Pa)	
	$L_{Aeq,1hr}$	L_{ASmax}
Sundays and Bank Holidays 08:00hrs to 16:30hrs	60*	65*

Note *: Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the local authority.

Table 5.2 *Recommended construction vibration thresholds for buildings*

Structure Type	Allowable Vibration (in terms of PPV) at the Closest Part of Sensitive Property to the Source of Vibration, at a Frequency of 4Hz and less:	
	Transient Vibration	Continuous Vibration
Reinforced or framed structures. Industrial and heavy commercial buildings	50mm/s	25mm/s
Unreinforced or light framed structures. Residential or light commercial-type buildings	15mm/s	7.5mm/s
Protected and Historic Buildings *	6mm/s – 15mm/s	3 mm/s – 7.5mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3mm/s	

Note *: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be employed:

- Site compounds will be located away from noise sensitive boundaries within the site constraints.
- The lifting of bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.

- For mobile plant items such as dump trucks, excavators and loaders, utilising an acoustic canopy to replace the normal engine cover and/or ensuring the enclosure panels are closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, noise control measures include fitting a more effective exhaust silencer system to reduce the noise emitted.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For compressors, generators and pumps, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation, and has been used in the predictive noise calculations. Based on the predicted CNL, screening giving a 10 dB reduction will be required at works locations within 50m of the closest NSLs.

Hours of Work

It is anticipated that the construction of the proposed development will be completed during normal construction hours i.e. 7 am to 7 pm Monday to Friday, and 8 am to 2 pm on Saturdays. However, it is possible that the contractor may wish to carry out certain operations outside these hours i.e. Sunday or evening hours during long summer days etc.

Consideration will be given to the scheduling of activities in a manner that reflects the location of the site and the nature of neighbouring properties. Each potentially noisy event/activity will be considered on its individual merits and scheduled according to its noise level, proximity to sensitive locations and possible options for noise control.

Depending on the noise emission levels experienced and associated noise impact, the appointed contractor(s) will be flexible and able to conduct certain works at hours which reflect periods when the neighbouring properties have lower sensitivities to noise.

Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise and vibration complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy or vibratory construction activity the CLO will inform the nearest sensitive locations of the time and expected duration of the works.

Noise and Vibration Monitoring

During the Construction Phase the appointed contractor will carry out noise monitoring at representative NSLs to evaluate and inform the requirement and / or implementation of noise management measures. Noise monitoring will be conducted in accordance with ISO 1996–1 (ISO 2016) and ISO 1996–2 (ISO 2017). The selection of monitoring locations will be based on the nearest representative NSLs to the working area which will progress along the length of the Proposed Development.

On review of the likely vibration levels associated with construction activities, it may be concluded that the construction of the Proposed Development is not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to adjacent buildings.

In the case of vibration levels giving rise to human discomfort, in order to minimise such impacts, the monitoring will be undertaken at a selection of sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

5.6 LANDSCAPE AND VISUAL

Site Management Procedures

The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.

Site hoarding and fencing will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

Tree Protection

Existing trees and hedgerows to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference will be made to BS5837: Trees in relation Design, Demolition and Construction – Recommendations (BSI, 2012).

5.7 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

There is low potential for previously unrecorded sub-surface archaeological or architectural heritage remains to survive along the proposed development route. There is however potential for archaeological features or finds to survive where the proposed route traverses the Cross River and townland boundaries.

In order to mitigate against the archaeological risks of the proposed development, the following is required:

- The appointment of a suitably qualified archaeological consultant to design and implement a mitigation strategy pre- and during the construction phase.
- This mitigation strategy will include archaeological testing where the route crosses townland boundaries, and a programme archaeological monitoring of the construction phase in greenfield areas.
- Provision will be made for the recording of any architectural heritage or archaeological features identified during geophysical survey or monitoring in areas where they will be impacted on by the development (in consultation with and with the permission of the National Monuments Service).

Please note that the recommendations given here are subject to the approval of the National Monuments Service, Department of the Housing, Local Government and Heritage.

5.8 TRAFFIC AND TRANSPORTATION

The appointed construction contractor(s) will develop a comprehensive Construction Traffic Management Plan (CTMP) prior to the commencement of works to mitigate the impacts of the construction phase on the surrounding road network. The CTMP will include the following measures:

- Temporary Traffic Management (TTM) measures during construction works will be implemented in accordance with Chapter 8 (Temporary Traffic Measures and Signs for Roadworks) of the Department of Transport Traffic Signs Manual (as amended).
- Temporary Traffic Management Design Guidance (August 2019) document provides guidance that will be followed in the design of TTM.
- Construction traffic will be closely monitored and controlled throughout the project. Temporary Traffic Management Operations Guidance (August 2019) document provides guidance that will be followed for TTM operations.
- The TTM and signing layout will take the individual features of the site into consideration and will be developed as part of the CTMP. TTM are subject to change as works are undertaken. Consequently, the appointed contractor(s) will need to determine the required signage depending on the area and stage of works.
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site.
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leading away from the construction works.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. Spill kits will be available on site. All scheduled maintenance carried out off-site will not be carried out on the public highway.
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage.

- Road crossings will be managed through appropriate traffic management strategies, including road closures and diversions where necessary, to ensure safety and minimise disruption.
- Appropriate supervision will be provided to control the flow of traffic when large trucks / machinery needs to cross public roads. STOP/GO boards will be used during movement.
- Car parking areas within the construction site will be prepared and maintained to a high standard. This includes ensuring the surface is finished to avoid mud and debris being tracked onto adjoining road.
- Deliveries and collections of materials will be planned and scheduled. Efforts will be made to stagger these activities, particularly avoiding the morning and evening peak hours, to reduce congestion and minimise delays.
- All construction vehicles will be required to park in designated areas off the adjacent road network. Parking on footpaths, grass verges, and double-parking will be strictly prohibited or limited to brief durations outside of peak hours.

Through the implementation of the above (non-exhaustive) list of measures, the appointed construction contractor(s) aims to minimise the impact on the surrounding road network, ensuring the safety of the public while facilitating the efficient progress of the construction project.

5.9 WASTE MANAGEMENT

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment. A site-specific Resource and Waste Management Plan (RWMP) will be prepared by the construction contractor prior to any excavations or construction works taking place on site. The RWMP will ensure that the management of resource and Construction & Demolition (C&D) waste at the site is undertaken in accordance with the current legal and industry standards. The plan will aim to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It will also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water) and should be regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

Adherence to the RWMP prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the *Waste Management Act 1996* as amended, and associated Regulations, the *Litter Pollution Act of 1997* as amended and the *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024)*, and that it will achieve optimum levels of waste reduction, re-use and recycling.

Typical waste materials that will be generated from the construction works will include:

- Soil and stones;
- Concrete, bricks, tiles and ceramics;
- Wood, glass and plastics;
- Metals;
- Gypsum-based construction material;
- Paper and cardboard;

- Mixed construction and demolition (C&D) waste;
- Chemicals (solvents, paints, adhesives, detergents etc.).

The management of all hazardous waste arisings, if they occur, shall be coordinated in liaison with Health and Safety Management.

The following mitigation measures will be implemented:

- Left over materials (e.g. timber off-cuts, concrete and metal) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

The mitigation measures presented above has been designed to address the potential effects associated with the development. These measures are designed to prevent, minimise, or offset the adverse impacts of the project.

Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

If any potentially contaminated material is encountered, it will need to be segregated from clean / inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication titled *Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous* using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the appointed construction contractor(s) will notify RCC and

provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

5.9.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows:

- Materials will be ordered on an 'as needed' basis to prevent over supply;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site;
- A waste tracking log will be established;
- Sub-contractors will be responsible for similarly managing their wastes; and
- All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

5.9.2 Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the development.

Waste materials generated will be segregated at the site compound, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:

- Concrete rubble;
- Metals;
- Timber; and
- Waste generated by workers activities.

The site Resource Manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

5.9.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

5.9.4 Responsibility

It will be the responsibility of the construction manager to ensure that a written record of all quantities and natures of wastes removed from the site are maintained on-site in a waste file (in hardcopy or electronically).

It is the responsibility of the project manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licensed or permitted waste facility in compliance with the relevant Regulations as outlined in the RWMP.

The contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in implementing the measures under the RWMP and in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Prior to commencement of the excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste stream will be established, along with waste collection permit numbers.

5.9.5 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The mitigation measures outlined in the oCEMP specifies the need for a RM to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager will identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

5.10 UTILITIES

Ongoing consultation with Uisce Éireann, EirGrid, ESB Networks, and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure a smooth construction schedule without disruption to local and business community. The appointed construction contractor(s) will be obliged to put best practice measures in place to ensure that there are no interruptions to these utilities, unless this has been agreed in advance.

All applicable standards, guidelines and codes of practice will be adhered to regarding both installation of the gas transmission pipeline and working in the vicinity of existing services, in particular the Gas Networks Ireland (GNI) Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018) and the Health & Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016).

Prior to commencing any construction activities, the appointed construction contractor(s) shall conduct a comprehensive utility locating survey using advanced technologies such as ground-penetrating radar (GPR) and electromagnetic induction

methods. This survey will accurately identify the location and depth of all existing underground services, including high voltage (HV) cables, water and gas pipelines, and telecommunication lines. Based on the results of the utility locating survey, exclusion zones will be demarcated around identified utilities. These zones will indicate areas where construction activities are restricted or subject to specific safety protocols.

All plant, machinery and equipment will be stored within a temporary construction compound or within the Works Area. Oils and fuels will not be stored on site and will be stored in an appropriate bunded area within the temporary storage compound.

6.0 CONSTRUCTION HEALTH AND SAFETY PLAN

The appointed construction contractor(s) will prepare a Construction Health and Safety Plan, which will be put in place prior to commencement of the works. A comprehensive site induction shall be conducted for all personnel prior to commencing any work on the site. The induction will cover the following topics:

- Overview of the project layout and site boundaries
- Site-specific hazards and risks
- Emergency evacuation procedures and assembly points
- Safe access and egress routes
- Location of first aid facilities and fire extinguishers
- Proper use of PPE
- Site rules and regulations
- Reporting procedures for incidents and near misses

All personnel, including subcontractors, visitors, and new workers, must complete the site induction before starting any work.

7.0 EMERGENCY PREPAREDNESS/ENVIRONMENTAL INCIDENT PLAN

Environmental incidents are events that result in harm or potential harm to the environment. These incidents include, but are not limited to, hazardous material spills, hydrocarbon spills, chemical spills, leaks, soil erosion, surface water pollution, groundwater pollution, air quality breaches, noise disturbances, and wildlife disruption.

An emergency plan for the construction works will be prepared by the appointed contractor(s) for all works, including specific sections for areas with high risk to the environment i.e. trenchless crossing.

Categories of Incidents

Incidents are categorised into three levels based on severity:

1. Major Incidents: Pose significant risk to the environment, health, and safety.
2. Moderate Incidents: Have a moderate impact and potential for environmental harm.
3. Minor Incidents: Minimal impact and easily manageable incidents.

Various types of environmental incidents that may occur on the construction site include hazardous material spills, soil erosion and sediment runoff, water contamination, air quality breaches, noise disturbances, and disruption of wildlife habitats.

Planning and Prevention

Environmental issues and potential emergencies are integral to project planning. Effective preventive and control measures are implemented, communicated to all project workers, including subcontractors, through tools like Contract Environmental Induction, Toolbox Talks, and Method Statement briefings.

Emergency contact details, Drainage Plan/Site Plan (with spill kit locations), will be posted on notice boards. Spill kits are available in the site compound's stores, strategically placed around the site, and within working vehicles. Vehicles carry sufficient spill kits matching their diesel/oil load.

Spill kits will be readily available on site. Proper placement of spill kits is crucial. They will be located as close as possible to potential spill areas and housed in clearly marked containers. These kits are mandatory at fuel storage or refuelling zones and will also be positioned near watercourses when work is being carried out nearby or within surface water drainage catchment. Mobile bowsers must always carry spill kits and drip trays/spill nappies. The choice and quantity of spill containment materials depend on the substance in use and the potential spill volume. Different absorbent types are accessible:

- Oil-Selective Absorbents: These are white or light blue and do not absorb water. They are suitable for spills on both land and water.
- Universal Absorbents: Grey in colour, these are intended for land spills.
- Chemical Absorbents: These could be yellow or grey and are designed for chemical or acid spills on land.

These absorbent types come in various forms:

- Granules, Sand and Shredded Fibres: These are applicable for spills on land.
- Pads: These can be used on land, particularly on hard surfaces, to contain or direct spills.
- Booms: These are designed to confine and absorb spills on water surfaces.

In addition to spill containment materials, spill kits must include appropriate Personal Protective Equipment (PPE), with gloves as a minimum requirement, and a copy of the Emergency Spill Response Plan. They will also feature disposal bags suitable for hazardous waste, including used absorbents and contaminated materials.

Regular inspections are necessary to ensure spill kits are adequately stocked and in good condition. This is especially crucial for kits located in remote areas, as they might be susceptible to vandalism or misuse. After usage, replenishing the spill kit promptly is vital to prepare for potential future spills. A detailed inventory of the kit's contents can be placed within the kit or in the site office at a minimum.

In order to prioritise safety and mitigate potential risks, as with any construction project a proactive approach will be taken towards anticipating and managing extreme weather events during the construction process. Weather forecasting will be reviewed to monitor meteorological conditions closely and identify the occurrence of storm events, lightening, heat or cold weather etc.

Emergency Response Protocols

There will be a Designated Emergency Coordinator and Responsible Personnel for Emergency Response. This individual(s) will bear primary responsibility for executing

the spill response procedure. Nevertheless, other personnel present on-site, including the General Foreman, Area Supervisor, Safety Officers, Fitters, General Operatives and those in charge of refuelling, will also possess awareness of the emergency spill response procedure. It is necessary to provide training for all staff members responsible for addressing spills. These individuals must:

- Be familiar with the whereabouts of spill kits and/or materials, as well as their proper application.
- Grasp the fundamentals of spill containment and possess knowledge of site drainage systems and the locations of surrounding environments where spills might be received.
- Understand the appropriate Personal Protective Equipment (PPE) specifications for managing oils, fuels, and other hazardous substances utilised on the site.
- Possess knowledge about the proper disposal methods for contaminated materials.
- This information can be conveyed in inductions but also will be repeated in toolbox talks on a regular basis.

When an impending extreme weather event is detected through forecasting systems, as part of safety protocols the work zones, construction equipment, materials, and machinery that may be vulnerable to damage or displacement by severe weather will be 'made safe' by being secured or moving to safe locations. The site will be monitored and adjustments to safety measures as needed to address changing conditions.

Coordination with Emergency Services and Regulatory Authorities

An Emergency Contacts List will be developed prior to commencement of construction. The Designated Emergency Coordinator and Responsible Personnel for Emergency Response will be aware of the appropriate authorities to be notified, if necessary, as well as the emergency services to be contacted if the incident exceeds the site's capacity for containment. The emergency contact list may encompass details for:

- Environmental Protection Agency (EPA);
- EPA 24-hour emergency incident line 0818 33 55 99.;
- Inland Fisheries Ireland (IFI);
  (Contacts: Catherine Kerins <catherine.kerins@fisheriesireland.ie> and Arnold Donnelly <arnold.donnelly@fisheriesireland.ie>)
- IFI 24-hour pollution line 0818 34 74 24;
- Emergency Services;
- Local Authority;
- An Garda Síochána;
- Health & Safety Authority;
- National Park and Wildlife Services; and
- Specialised cleanup and waste disposal contractor.

Response to an Incident

All employees will be instructed to bring any environmental incidents they identify to the immediate attention of the Project / Site or Line Manager, after first taking what steps they can to contain/ remediate the incident (without putting the health and safety of themselves or others at risk).

In the event of an incident, prompt actions must be taken: the incident response team and project management will be notified without delay, and relevant emergency response protocols will be activated based on the severity of the incident. Priority shall be given to ensuring the safety of both workers and the surrounding community, with a focus on containing spills and leaks to prevent additional dispersion. Cleanup procedures will be conducted in adherence to guidelines.

Reporting and Investigation

Immediate Reporting

- Document incident details, including date, time, location, materials involved, and actions taken.
- Notify regulatory agencies and stakeholders as required by law.

Investigation and Root Cause Analysis

- Conduct a thorough investigation to determine the cause of the incident.
- Identify contributing factors and take corrective actions to prevent recurrence.

8.0 TRAINING PLAN

The following outline training plan outlines the training objectives and activities designed to educate construction site personnel about the Construction Environmental Management Plan, Construction Health and Safety Plan, Emergency Preparedness and Environmental Incidents Plan. The goal is to ensure that all team members are knowledgeable about the plan's protocols and can respond effectively in case of environmental incidents or emergencies.

Sample Training Objectives

- Familiarise personnel with the Construction Environmental Management Plan, Emergency Preparedness and Environmental Incidents Plan.
- Provide understanding of environmental incident categories, response protocols, and reporting procedures.
- Ensure proper usage of equipment, communication channels, and safety measures during incidents.
- Educate personnel on their roles and responsibilities within the incident response team.

Sample Training Sessions

1. Introduction to the Plan
    - Overview of the purpose and importance of the Construction Environmental Management Plan, Emergency Preparedness and Environmental Incidents Plan.
2. Evacuation and Safety Procedures
    - Overview of evacuation routes and assembly points in case of significant incidents.
    - Training on ensuring personal safety and the safety of others during an emergency.
3. Emergency Response Procedures

- Discussion on the different categories of incidents: Major, Moderate, and Minor.
- Description of common types of environmental incidents that may occur on the construction site. (Refuelling spillages, hydrocarbon spillage, hydraulic oil leak, alkaline wash water leak)
- Detailed explanation of the steps to take when an environmental incident occurs.

4. Roles and Responsibilities
    - Clarification of roles within the incident response team, including Team Leader, First Aid Responders, Spill Control, Communication, etc.
    - Discussion on teamwork, communication, and coordination during incidents.
5. Reporting and Documentation
    - Guidance on properly documenting incident details, including filling out incident report forms.
    - Explanation of the importance of accurate and timely reporting.

Training Frequency, Training Material and Resources

New personnel will undergo this training upon induction to the construction site. Providing comprehensive training sessions will equip all construction site personnel with the necessary knowledge and skills to effectively respond to incidents and safeguard the environment and worker safety.

9.0 REVIEW AND FINALISATION OF THE PLAN

The oCEMP is an essential framework that guides the chosen construction contractor in implementing environmentally responsible practices throughout the construction programme.

The appointed construction contractor(s) will provide a further detailed CEMP that will include any subsequent conditions relevant to the Proposed Development and set out further detail of the overarching vision of how the appointed construction contractor(s) of the Proposed Development manage the Site in a safe and organised manner.

A systematic review and finalisation process ensures the plan's adaptability and effectiveness. Regular audits and inspections serve as crucial checkpoints to assess performance and identify improvements.

Given project dynamics and potential changes, the CEMP remains dynamic, evolving alongside site activities and project alterations.

The plan will be evaluated through routine audits, identifying areas for enhancement and ensuring alignment with project changes and regulations. As circumstances evolve, the CEMP is updated for ongoing suitability.

10.0 REFERENCES

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2. US Environment Protection Agency (USEPA), Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition (periodically updated) (1986).
3. The Scottish Office – Development Department, Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings (1996).
4. Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction (2014).
5. UK Office of Deputy Prime Minister, Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance (2002).
6. USEPA, Fugitive Dust Technical Information Document for the Best Available Control Measures (1997).
7. Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No. 20 of 2011). Sub-ordinate and associated legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011
    - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended
    - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended
    - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
    - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
    - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
    - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended
    - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007)
    - Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998)
    - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
    - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
    - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
8. Litter Pollution Act 1997 (No. 12 of 1997) as amended
9. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015)
10. Construction Industry Research and Information Association (CIRIA) Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).
11. CIRIA, Environmental Good Practice on Site (3rd edition) (C692).